



Activity 1

Sea-Rail Combined Transport Interoperability Analysis

Document Version: 2



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ABSTRACT

This document analyses the interoperability requirements for introducing solutions that would contribute to the facilitation of rail transport use as part of MoS (Motorways of the Sea) supply chains. Three important topics that would improve its interoperability with a large impact on the adoption of combined sea-rail transport have been analysed: the electronic rail consignment note, the interoperability of simplified transit procedures for rail in cross-border operations between Customs of different Member States and the interoperability of shunting operations' arrangements between shunting yards in the main railway infrastructure network and railway terminals at ports.

DISCLAIMER

"The sole responsibility of this publication lies with the author. The European Union is not responsible for any use that may be made of the information contained therein."

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GLOSSARY OF ABBREVIATIONS

ACK	Acknowledgement of Hand-Over
AEO	Authorised Economic Operators
AOD	Advice of Delivery
BIP	Border Inspection Posts
CCC	Community Customs Code
CCIP	Customs Code Implementing Provisions
CDS	Central Data System
CIM	Contract of International Carriage of Goods by Rail
CroBIT	Cross Border Information Technology
CTD	Create Transport Dossier
EC	European Community
ECN	Electronic Consignment Note
EDI	Electronic Data Interchange

EDIFACT	Electronic Data Interchange for Administration, Commerce and Transport
ERD	European Railway Agency
ERTMS	European Rail Traffic Management System
ETA	Estimated Time of Arrival
ETI	Estimated Time of Interchange
EU	European Union
FTP	File Transfer Protocol
HNDO	Hand Over Information
IM	Infrastructure Manager
ISR	International Service Reliability
IT	Information Technology
ITU	International Transport Unit
Km	Kilometre
LRU	Lead Railway Undertaking
NCTS	New Computerised Transit System
NIS	National Information Systems
PCS	Port Community System
PRN	Printed/Paper Consignment Note
RFID	Radio Frequency IDentification
RTMS	Rail Transport Management System
RU	Railway Undertakings
SAD	Single Administrative Document
TAF-TSI	Telematic Applications for Freight – Technical Specification for Interoperability
TEU	Twenty-Foot Equivalent Unit

UTD	Update Transport Dossier
VPN	Virtual Private Network
XML	Extensible Markup Language

GLOSSARY OF TERMS

DG TAXUD	Directorate General for Taxation and Customs Union
Action	“Business to Motorways of the Sea” Action
B2MoS	“Business to Motorways of the Sea”
Commission	Commission of the European Communities

1 Introduction

1.1 Main Objective

The main objective of sub-activity A1.4 is to propose recommendations for the creation of an interoperable electronic environment for commercial, shunting and transit operations in sea-rail combined transport.

Sub-activity A1.4 has consisted of the following tasks:

- Specification of opportunities for the interoperability of electronic rail consignment solutions for MoS as well as the use of standards designed for international rail transport in national rail transport.
- Analysis and evaluation of the requirements for achieving interoperability of simplified rail transit procedures in cross-border sections and mutual recognition of this simplified procedure between Customs in different Member States.
- Roadmap for the establishment of an electronic environment for commercial, shunting and transit operations in sea-rail combined transport.

1.2. Scope

The scope of this sub-activity includes several actions.

Firstly, the deployment of TAF-TSI (Telematic Applications for Freight-Technical Specification for Interoperability) is about halting and reversing the loss in rail freight market share in Europe. The rail system in Europe has become excessively complex in recent years and this has become difficult for setting common priorities and targets. Politicians have increasingly stepped in to oblige stakeholders to operate with transparent rules and the intention of the Telematics Application for Freight is to create open conditions for companies to operate in the market. This report presents several solutions developed, which supports the implementation of TAF-TSI providing consignment note information as well as recommended actions to be implemented for the interoperability of electronic rail consignment solutions for MoS.

Secondly, bottlenecks due to lack of synchronisation between the terminal and ship's closing time and train schedules are a major issue to be overcome in order to simplify export procedures in some EU Member States. On the import side, the main issue to be addressed is the implementation of IT tools for supporting simplified procedures for transit and carrying on Customs clearance at destination dry-ports.

Finally, a key for increasing the competitiveness of intermodal container transport by rail is to achieve more frequent operations of heavy haul container trains between port and inland railway terminals. One important factor will be carrying out fast and flexible

transshipment, shunting and coupling of container wagons. Several recommendations are proposed to be implemented for the interoperability of simplified rail transit procedures in cross-border operations.

2 Interoperability of Electronic Rail Consignment Solutions for MoS

The electronic rail consignment note would significantly contribute to the facilitation of rail transport use as part of MoS supply chains and to ease the exchange of such document among MoS stakeholders. Rail consignment notes reflect the contracts between the railway undertaking and the railway freight operator, as well as between the rail freight operator and its client.

2.1 The European Framework

2.1.1 CIM (Consignment Note)

For the international transport of goods by railway, the document used is the CIM consignment note, which is regulated by the CIM (Contract of International Carriage of Goods by Rail) and the COTIF (International Convention on Transport of Goods by Railways) signed in Bern in 1970 and 1980 respectively. This paper document represents the contract of carriage between the consignor (sender) and the carrier (railway company) (The following figure).

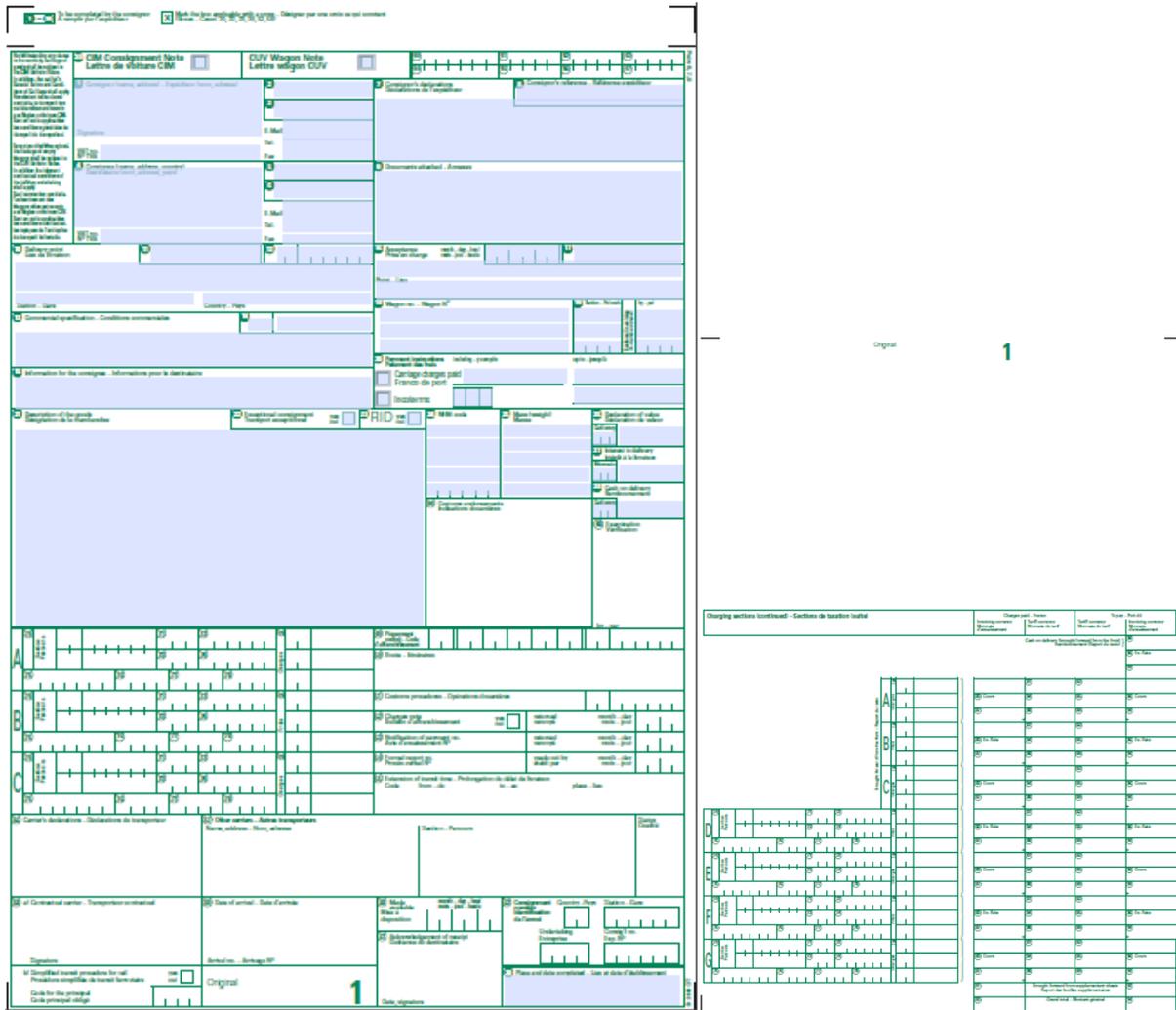


Figure 1. CIM (Consignment Note). **Source:** International Rail Transport Committee (CIT), 2006

The following Table describes in detail the information required for each box in the Consignment note.

- M = mandatory information
- C = conditional information (mandatory if the condition is satisfied)
- O = optional information

Table 1. Paper Consignment note (CIM). **Source:** International Rail Transport Committee (CIT), 2006

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
1	M	Consignor: Name, postal address (including country code in accordance with ISO 3166), signature and where possible, telephone or fax number (with	-Contractual carrier -Successive carrier -Consignee	-Consignor	

Box No	Data	Data	Data Access		
	Status		Read	Write	Amend
		international prefix) or e-mail address of the consignor. The signature is to be replaced by the consignment number shown in box 62 (see Article 6 § 3 CIM) unless specially agreed otherwise between the consignor and carrier. For goods moving between the Member States of the European Union, the consignor should also provide his VAT registration number if he has one.			
2	0	Customer code for the consignor If the customer code is missing, it may be entered by the carrier.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
3	0	Customer code for the payer of prepaid charges if not the consignor. If the customer code is missing, it may be entered if it can be inferred from information entered in boxes 13 or 14.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
4	M	Consignee: Name, postal address (including country code in accordance with ISO 3166) and if possible the telephone or fax number or e-mail address of the consignee. For goods moving between the Member States of the European Union, the consignor should also provide the VAT registration number of the consignee if he has one and if the consignor knows it.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
5	0	Customer code for the consignee. If the customer code is missing, it may be entered by the carrier.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
6	0	Customer code for the payer of non-prepaid charges if not the consignee.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
7	C	Consignor's declarations committing the carrier. Code Meaning 1 Consignee not-authorized to take control of the goods 2 Authorised consignee (within the meaning of customs law) 3 Escort(s) ... [family and first name(s)] 4 Filled mass [weight] in kg ... [for gas tank wagons refilled without having been cleaned – see RID paragraph 5.4.1.2.2 (c)]	-Consignee	-Consignor	-Contractual carrier -Successive carrier

Box No	Data	Data	Data Access			
	Status		Read	Write	Amend	
		5	Emergency telephone number for irregularities or accidents with dangerous good			
		6	Emergency telephone number for irregularities or accidents with dangerous good			
		7	Loading by the carrier			
		8	Unloading by the carrier			
		9	Agreed transit period: ...			
		10	Completion of administrative formalities: ... [Details of the documents which will be made available to the carrier by a precisely specified official body or a contractually agreed body and of the location at which these will be available to the carrier – see Article 15 § 1 CIM. The documents are to be indicated in code and in plain text on the paper consignment note, only in code on the electronic consignment note. Additional information may be entered in a free text area for each code. The UN/EDIFACT 1001 list of codes (www.unece.org) is to be used to code accompanying documents] ... (further remarks – see Article 15 § 4 CIM).			
		11	Exceptional consignment: ... (reference number for each of the carriers/infrastructure managers involved)			
		12	Number of flat pallets marked “EUR” and exchangeable in the European Pallet Pool			
		13	Number of box-pallets marked “EUR” and exchangeable in the European Box-Pallet Pool			
		14	If the carrier’s wagon sheets are used: number of sheets, abbreviation for the carrier and wagon sheet number(s)			
		15	If the carrier’s straps are used: number of straps and abbreviation for the carrier			
		16	Other declarations: ... (Designation of a representative, designation of a sub-contracting carrier,			

Box No	Data	Data	Data Access														
	Status		Read	Write	Amend												
		request for attention to be given to the consignment en-route, etc.) 24 Dangerous goods packed in limited quantities the total gross mass of which exceeds eight tonnes per wagon or UTI															
8	0	Consignor's reference	-Consignee	-Consignor	-Contractual carrier -Successive carrier												
9	C	Documents attached: listing of all the accompanying documents required for carriage which are attached to the consignment note.	-Consignee	-Consignor	-Contractual carrier -Successive carrier												
10	M	Delivery point	-Consignee	-Consignor	-Contractual carrier -Successive carrier												
11	0	Code for the delivery point.	-Consignee	-Consignor	-Contractual carrier -Successive carrier												
12	M	Code for the station servicing the delivery point.	-Consignee	-Consignor	-Contractual carrier -Successive carrier												
13	C	Commercial specification <table border="0"> <thead> <tr> <th>Code</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Route...</td> </tr> <tr> <td>2</td> <td>Traffic flow...</td> </tr> <tr> <td>3</td> <td>Carriers mandated to perform the carriage, section, status</td> </tr> <tr> <td>4</td> <td>Defined frontier stations ...</td> </tr> <tr> <td>5</td> <td>Other conditions requested ... (for example, EDI contract number if an electronic consignment note or the numbers of other customer agreements or tariffs is used)</td> </tr> </tbody> </table>	Code	Meaning	1	Route...	2	Traffic flow...	3	Carriers mandated to perform the carriage, section, status	4	Defined frontier stations ...	5	Other conditions requested ... (for example, EDI contract number if an electronic consignment note or the numbers of other customer agreements or tariffs is used)	-Consignee	-Consignor	-Contractual carrier -Successive carrier
Code	Meaning																
1	Route...																
2	Traffic flow...																
3	Carriers mandated to perform the carriage, section, status																
4	Defined frontier stations ...																
5	Other conditions requested ... (for example, EDI contract number if an electronic consignment note or the numbers of other customer agreements or tariffs is used)																
14	C	Number of customer agreement or tariff: Number of the customer agreement or tariff, which covers the section performed by the carrier who first takes charge of the goods, preceded by the identifier code 1 for customer agreements and 2 for tariffs	-Consignee	-Consignor	-Contractual carrier -Successive carrier												
15	0	Information for the consignee: Information from the consignor to the	-Consignee	-Consignor													

Box No	Data	Data	Data Access		
	Status		Read	Write	Amend
		consignee relating to the consignment. This information is not to commit the carrier.			
16	M	Acceptance: Point, date and time at which the goods were accepted.	-Contractual carrier -Successive carrier -Consignee	-Consignor	
17	O	Code for the acceptance point: The carrier is to provide the consignor with the code in the customer agreement. If the code is missing, it may be entered by the carrier.	-Consignee	-Consignor	
18	C	Wagon No	-Consignee	-Consignor	-Contractual carrier -Successive carrier
19	C	Sectional invoicing: If part or all of the journey is to be invoiced separately by a carrier other than the forwarding or destination carrier, enter the code for the carrier in accordance with the list of carrier codes (www.cit-rail.org) or the country code in accordance with the appendix to UIC leaflet 920-14 in the left-hand column to indicate the section to be invoiced; enter the code for the carrier who is to invoice the amount in question in the right-hand column.		-Consignor	-Contractual carrier -Successive carrier
20	C	Payment instructions: Instructions for the payment of charges in accordance with point 5.2 of GLV-CIM manual. Absence of instructions is to mean that the charges will be paid by the consignor.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
21	C	CIM consignment note: Description of the goods: - Carriage in wagon loads: <ul style="list-style-type: none"> • number of wagons [tally number] when they are loaded and consigned as means of transport • Numbers of the wagons [painted numbers] when they are consigned as goods, also see the entry for box 30. - Tally number and types of UTIs. - Number of packages, particular marks and numbers needed to identify less-than-wagonload consignments. - Alphabetic code for the nature of the packaging in accordance with UNECE recommendation No 21 (www.unece.org). On paper consignment notes the nature of the packaging may be given in plain text. - Description of the goods, for dangerous goods, the information required by section	-Consignee	-Consignor	-Contractual carrier -Successive carrier

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		<p>5.4.1 RID.</p> <ul style="list-style-type: none"> - "Harmonised System" code number (www.wcoomd.org) for the goods when required by customs law (for example for sensitive goods). - The consignor must also provide a description of the seals which he has fixed to the wagon or UTI and indicate how many there are. - A label is to be fixed or a pictogram stamped if goods are subject to customs supervision. - Movement Reference Number (MRN) required by customs law for wagons and UTI, supplemented by <ul style="list-style-type: none"> • "E MRN" if an export declaration has been lodged *) • "T MRN" if a transit declaration has been lodged *) • "TS MRN" if a transit declaration with security data has been lodged *) • "EXS MRN" if the exit summary declaration has been made separately by the consignor • "ENS MRN" if the entry summary declaration has been made separately by the consignor <p>*) The accompanying document has to be mentioned in box 9.</p> <ul style="list-style-type: none"> - Administrative Reference Code (ARC) required by excise law for wagons and UTI, supplemented by <ul style="list-style-type: none"> • "ARC" *) <p>*) The accompanying document has to be mentioned in box 9.</p> <ul style="list-style-type: none"> - The remark "EXPORT" if the export formalities for the wagon and UTI have been completed at the customs office of exit of the place where the goods are accepted for carriage in accordance with Article 793 para. 2 (b) Implementing Provisions for the Customs Code. <p><u>CIM consignment note for combined transport:</u></p> <p>No of UTI/ Type of UTI/ Length of UTI/Net mass [weight] of UTI/ Tare of UTI</p> <p>Description of the goods:</p> <ul style="list-style-type: none"> - No of the UTI, - type code for the UTI, - length of the UTI, 			

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		<p>- net mass [weight] of the contents of the UTI,</p> <p>- tare of the UTI,</p> <p>- description of the goods; for dangerous goods, the details required by the RID,</p> <p>- Harmonised System (HS) code number (www.wcoomd.org) for the goods when required by customs law (for example, for sensitive goods),</p> <p>- number of the wagon when it has been consigned as goods – see also the entry in box 30,</p> <p>- identity numbers of the seals attached to the UTI by the consignor,</p> <p>- references relating to the UTI,</p> <p>- a label is to be fixed or a pictogram stamped if goods are subject to customs supervision,</p> <p>- Movement Reference Number (MRN) required by customs law for wagons and UTI, supplemented by</p> <ul style="list-style-type: none"> • “E MRN” if an export declaration has been lodged *), • “T MRN” if a transit declaration has been lodged *), • “TS MRN” if a transit declaration with security data has been lodged *), • “EXS MRN” if the exit summary declaration has been made separately by the consignor, • “ENS MRN” if the entry summary declaration has been made separately by the consignor. <p>*) Details of the accompanying document must be given in box 9.</p> <p>- Administrative Reference Code (ARC) required by excise law for wagons and UTI, supplemented by</p> <ul style="list-style-type: none"> • “ARC” *), <p>*) Details of the accompanying document must be given in box 9.</p> <p>- The remark “EXPORT” if the export formalities for the wagon and UTI have been completed at the customs office of exit of the place where the goods are accepted for carriage in accordance with Article 793 para. 2 (b) Implementing Provisions for the Customs Code.</p>			
22	C	<p>Exceptional consignment: Insert a cross when the provisions for the international carriage of exceptional consignments</p>	-Consignee	-Consignor	-Contractual carrier -Successive

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		require that.			carrier
23	C	RID: Insert a cross when the goods are subject to the RID.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
24	M	NHM code 6-digit NHM code for the goods (www.uic.org). For combined traffic, the NHM code for the UTI may be used	-Consignee	-Consignor	-Contractual carrier -Successive carrier
25	M	<u>CIM consignment note:</u> Mass [weight]: Indicate - the gross mass of the goods (including packaging) or the quantity of the goods expressed by other means, separately by NHM code, - the tare of UTI, loading tackle, and exchangeable and non exchangeable equipment, - The total mass of the consignment. <u>CIM consignment note for combined transport:</u> Mass [weight]: Indicate - the gross mass of UTI 1 - the gross mass of UTI 2 - The total mass of consignment.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
26	C	Declaration of value: Details of the value of the goods and the currency code when the value exceeds the limit given in Article 30 § 2 CIM.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
27	C	Interest in delivery: Details of the amount and currency code of a special interest in delivery.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
28	C	Cash on delivery: Details of the amount to be collected on delivery and the currency code.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
29	M	Place and date completed: Place and date (year, month, day) at which the consignment note was made out.	-Consignee	-Consignor	-Contractual carrier -Successive carrier
30	M	Description of the document	-Consignee	-Consignor	-Contractual carrier -Successive carrier

Box	Data	Data	Data Access
-----	------	------	-------------

No	Status		Read	Write	Amend
40	0	Coding box 1: 6 character box to be used by the forwarding carrier. If necessary, a train number may be entered.	-Consignor -Consignee		-Contractual carrier -Successive carrier
41	0	Coding box 2: 4 character box to be used by the forwarding carrier.			-Contractual carrier -Successive carrier
42	0	Coding box 3: 4 character box to be used by the forwarding carrier.			-Contractual carrier -Successive carrier
43	0	Coding box 4: 4 character box to be used by the forwarding carrier.			-Contractual carrier -Successive carrier
44	0	Coding box 5: 6 character box to be used by the destination carrier. If necessary, a train number may be entered.	-Consignor -Consignee		-Contractual carrier -Successive carrier
45	0	Coding box 6: 4 character box to be used by the destination carrier.			-Contractual carrier -Successive carrier
46	0	Coding box 7: 4 character box to be used by the destination carrier.			-Contractual carrier -Successive carrier
47	0	Coding box 8: 4 character box to be used by the destination carrier.			-Contractual carrier -Successive carrier
48	C	Examination: Details of the results of the examination and of the carrier undertaking it in accordance with the list of carrier codes (www.cit-rail.org) (see Article 11 §§ 2 and 3 CIM).	-Consignor -Consignee		-Contractual carrier -Successive carrier
49	M	Prepayment coding: Coding of the instructions for the payment of charges in accordance with UIC leaflet 920-7 (2 characters for the instruction on payment, 5 x 2 characters for the codes for the charges to be paid by the consignor, 2 characters for the country code + 6 characters for the station code ("up to ...").			-Contractual carrier -Successive carrier
50	M	Route: Details of the actual route using codes in accordance with UIC leaflet 920-5. These codes may be supplemented by the route in plain text. Where there have been circumstances preventing carriage, indicate the new route as necessary with the endorsement "Diverted because of...".	-Consignor -Consignee		-Contractual carrier -Successive carrier
51	C	Customs procedures: Name and code for the station in accordance with DIUM in which the formalities required by customs and other administrative authorities are to	-Consignor -Consignee		-Contractual carrier -Successive carrier

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		be undertaken.			
52	C	Charges note: - Insert a cross if the charges note is attached to the consignment note. - Indicate the date on which the charges note was returned (month, day).	-Consignor -Consignee		-Contractual carrier -Successive carrier
53	C	Notification of payment No: State: - the number of the notification of payment - the date of its return (month, date).	-Consignor		-Contractual carrier -Successive carrier
54	C	Formal report: Number of the report form, the date it was made out (month, day), and the code of the carrier who made it out in accordance with the list of carrier codes (www.cit-rail.org).	-Consignor -Consignee		-Contractual carrier -Successive carrier
55 (continued)	C	Extension of transit period: Where the transit period is extended in accordance with Article 16 § 4 CIM, enter the code for the cause, the beginning and the end (month, day, hour) and the location of the extension: 1 Completion of formalities required by customs or other administrative authorities (Article 15 CIM) 2 Examination of the consignment (Article 11 CIM) 3 Amendment of the contract of carriage (Article 18 CIM) 4 Circumstances preventing carriage (Article 20 CIM) 5 Circumstances preventing delivery (Article 21 CIM) 6 Attention to be given to the consignment 7 Rectification of the load following unsatisfactory loading by the consignor 8 Transshipment following unsatisfactory loading by the consignor 9 Other causes:...	-Consignor -Consignee		-Contractual carrier -Successive carrier

Box No	Data Status	Data	Data Access																										
			Read	Write	Amend																								
56	C	<p>Carrier's declarations: As applicable, declarations by the carrier such as</p> <ul style="list-style-type: none"> - the number of the authorisation to load, - load limit, - reservations with reasons, - point, date and time at which the goods were accepted if they differ from the information given by the consignor in box 16, - agreed transit period if the details given by the consignor in box 7 are not correct, - name and address of the carrier to whom the goods have been actually handed over if not the contractual carrier. - Mixed system for the electronic consignment note: <ul style="list-style-type: none"> • Printouts created in ...[location]... by ...[carrier code] or • Conversion into electronic data in ...[location]... by ...[carrier code]. - the number of the contract to subcontract and the code for the substitute carrier (to be provided by the carrier who concluded the contract to subcontract with the substitute carrier). <p>Reservations with reasons are to be entered in code (see the table below), in the following manner: "reservation with reason No ...". When codes 2, 3, 4, 11 and 12 are used, details of the reservation must be given.</p> <table border="0"> <thead> <tr> <th>Code</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Without packaging</td> </tr> <tr> <td>2</td> <td>Unsatisfactory packaging:...(give details)</td> </tr> <tr> <td>3</td> <td>Inadequate packaging: ... (givedetails) Goods</td> </tr> <tr> <td>4.1</td> <td>- clearly in poor condition:(give details)</td> </tr> <tr> <td>4.2</td> <td>- damaged: (give details)</td> </tr> <tr> <td>4.3</td> <td>- wet: ... (give details)</td> </tr> <tr> <td>4.4</td> <td>- frozen: ... (give details)</td> </tr> <tr> <td>5</td> <td>Loaded by the consignor</td> </tr> <tr> <td>6</td> <td>Loaded by the carrier in inclement weather at the request of the consignor</td> </tr> <tr> <td>7</td> <td>Unloaded by the consignee</td> </tr> <tr> <td>8</td> <td>Unloaded by the carrier in inclement weather at the request of the consignee</td> </tr> </tbody> </table> <p>Impossible to make the</p>	Code	Meaning	1	Without packaging	2	Unsatisfactory packaging:...(give details)	3	Inadequate packaging: ... (givedetails) Goods	4.1	- clearly in poor condition:(give details)	4.2	- damaged: (give details)	4.3	- wet: ... (give details)	4.4	- frozen: ... (give details)	5	Loaded by the consignor	6	Loaded by the carrier in inclement weather at the request of the consignor	7	Unloaded by the consignee	8	Unloaded by the carrier in inclement weather at the request of the consignee	-Consignor -Consignee		-Contractual carrier -Successive carrier
Code	Meaning																												
1	Without packaging																												
2	Unsatisfactory packaging:...(give details)																												
3	Inadequate packaging: ... (givedetails) Goods																												
4.1	- clearly in poor condition:(give details)																												
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8	Unloaded by the carrier in inclement weather at the request of the consignee																												

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		<p>examination in accordance with Article 11 § 3 CIM, because of</p> <p>9.1 - inclement weather</p> <p>9.2 - sealing of the wagon or UTI</p> <p>9.3 - load in the wagon or UTI inaccessible</p> <p>10 Request for examination in accordance with Article 11 § 3 CIM presented late by the consignor</p> <p>11 Examination not made because of a shortage of resources: ... (give details)</p> <p>12 Other reservations: ... (give details)</p>			
57	C	<p>Other carriers: Undertaking code in accordance with the list of carrier codes (www.cit-rail.org) and optionally name and postal address in plain text of carriers other than the contractual carrier; section to be performed, in code in accordance with DIUM and optionally in plain text; status of carriers (1° = successive carrier, 2° = substitute carrier). This box is to be filled out by the forwarding carrier but only if carriers other than the contractual carrier participate in the performance of the carriage.</p>	-Consignor -Consignee		-Contractual carrier -Successive carrier
58	M	<p>a) Contractual carrier: Undertaking code in accordance with the list of carrier codes (www.cit-rail.org) and optionally name and postal address in plain text of the contractual carrier plus signature. The signature is to be replaced by the consignment number shown in box 62 (see Article 6 § 3 CIM) unless specially agreed otherwise between the consignor and carrier.</p> <p>b) Simplified transit procedure for rail: By marking a cross in the box, the contractual carrier having his registered office in the European Union (EU) or in another contracting party of the EU-EFTA Convention on a Common Transit Procedure, requests that the simplified transit procedure for rail defined in Articles 414 to 425, 441 and 442 of the implementing provisions for the Community Customs Code (Regulation (EEC) /2454/93), or the corresponding provisions of the EUEFTA Convention on a Common Transit Procedure, be applied.</p>	- Successive carrier - Consignor - Consignee		-Contractual carrier -Successive carrier

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		<p>He thus certifies that all the carriers taking part in the carriage including, if applicable, substitute carriers, are authorised to apply the simplified transit procedure for rail. The contractual carrier thus becomes the principle to the rail simplified transit movement.</p> <p>If the contractual carrier does not have his registered office in the European Union or in another contracting party of the EU-EFTA Convention on a Common Transit Procedure, he is to request that the simplified transit procedure for rail be applied in the name and for the account of the carrier that first takes over the goods in a Member State of the European Union or in another Member State of the EU-EFTA Convention on a Common Transit Procedure. He thus certifies that that carrier and all the carriers following including, if applicable, substitute carriers, are authorised to apply the simplified transit procedure for rail. That carrier thus becomes the principle to the rail simplified transit movement. His code may only be used by the contractual carrier when he is authorised to do so.</p> <p>Examples of how box 58b) is to be filled in are shown at the end of this appendix.</p>			
59	M	<p>Date of arrival: Date of arrival of the consignment at the destination station (year, month, day). The carrier may add an arrival number.</p> <p>Below this box, the number and description of the sheet of the consignment note. This information is to be pre-printed on the paper consignment note and stored in the electronic consignment note record.</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier <p>(Data provided by the destination carrier.)</p>
60	C	<p>Made available: Time that the consignment is made available to the consignee (month, day, hour). This information on the consignment note may be replaced by another means.</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier <p>(Data provided by the destination carrier.)</p>
61	C	<p>Acknowledgement of receipt: Date and signature of the consignee at the time of delivery.</p> <p>Acknowledging of receipt on the consignment note itself may be replaced</p>	<ul style="list-style-type: none"> - Contractual carrier - Successive carrier - Consignor 	- Consignee	

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		by another means.			
62	M	<p>Consignment number: Identification number of the consignment [country code in accordance with the appendix to UIC leaflet 920-14 and station code in accordance with DIUM, code for the forwarding carrier or substitute carrier in accordance with the list of carrier codes (www.cit-rail.org) and consignment number].</p> <p>On paper consignment notes, a control label is to be applied to sheets 2 (invoice) and 5 (duplicate invoice).</p> <p>When identification numbers for consignments are allocated by computer, control labels need not be used.</p>	<ul style="list-style-type: none"> - Consignor - Consignee - Successive carrier 	- Contractual carrier	

Charging sections

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
70	M	<p>Codes for the charging sections: International codes for the country in accordance with the appendix to UIC leaflet 920-14 and station or point in accordance with DIUM at the beginning and end of the charging section or location where just charges accrue.</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier
71	C	<p>Route code when the customer agreement or the tariff applied provide for it.</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier
72	M	<p>NHM Code: NHM code (www.uic.org) determining the charges applicable (need not necessarily correspond to that entered in box 24).</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier
73	C	<p>Currency: Code for the currency of the amounts shown in the charging section in accordance with point 3 of this appendix.</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier
74	O	<p>Charged mass [weight], separately by tariff and NHM code. As appropriate, area in m² or the volume of the wagon or goods in m³ if used as the basis for charging.</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier
75	M	<p>Customer agreement or tariff applied</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier
76	O	<p>Km/Zone: Tariff distance, expressed in km or zones, between the stations or points corresponding to the</p>	<ul style="list-style-type: none"> - Consignor - Consignee 		<ul style="list-style-type: none"> - Contractual carrier - Successive carrier

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
		beginning and end of the charging section.			
77	0	Supplements, fees, deductions	- Consignor - Consignee		- Contractual carrier - Successive carrier
78	0	Unit charge: including any supplements or deductions, separately by NHM code or a dash where a customer agreement providing for centralised charging, applies	- Consignor - Consignee		- Contractual carrier - Successive carrier
79	C	Charges: Description of the charges in accordance with point 5.1 of this manual, with the individual amounts.	- Consignor - Consignee		- Contractual carrier - Successive carrier
80	C	Cash on delivery: Amount of cash on delivery brought forward from the front.	- Consignor - Consignee		- Contractual carrier - Successive carrier (Data provided by the destination carrier.)
81	0	Charges paid: Carriage charge to be paid by the consignor in the tariff currency, separately by tariff and NHM code or a dash when a customer agreement with centralised charging applies.	- Consignor		- Contractual carrier - Successive carrier
82	0	Charges due: Carriage charges to be paid by the consignee in the tariff currency, separately by tariff and NHM code or a dash when a customer agreement with centralised charging applies.	- Consignee		- Contractual carrier - Successive carrier
83	C	Exchange rate for charges paid: Exchange rate for amounts to be paid by the consignor which are not expressed in the invoicing currency.	- Consignor		- Contractual carrier - Successive carrier
84	C	Charges to be paid by the consignor: Total of the charges to be paid by the consignor in the tariff currency.	- Consignor		- Contractual carrier - Successive carrier
85	C	Charges to be paid by the consignee: Total of the charges to be paid by the consignee in the tariff currency.	- Consignee		- Contractual carrier - Successive carrier
86	C	Exchange rate for charges due: Exchange rate for amounts to be paid by the consignee which are not expressed in the invoicing currency.	- Consignee		- Contractual carrier - Successive carrier
87	C	Charging section in the invoicing currency to be paid by the consignor	- Consignor		- Contractual carrier - Successive carrier

Box No	Data Status	Data	Data Access		
			Read	Write	Amend
88	0	Charging section in the tariff currency to be paid by the consignor or a dash when a customer agreement with centralised charging applies and there are no ancillary charges entered in the charging section which are to be passed back to the carrier at the beginning of the journey.	- Consignor		- Contractual carrier - Successive carrier
89	0	Charging section in the tariff currency to be paid by the consignee or a dash when a customer agreement with centralised charging applies and there are no ancillary charges entered in the charging section which are to be passed back to the carrier at the beginning of the journey	- Consignee		- Contractual carrier - Successive carrier
90	C	Charging section in the invoicing currency to be paid by the consignee	- Consignee		- Contractual carrier - Successive carrier
91	C	Total of supplementary sheets brought forward charges paid: Total of charging sections shown on supplementary sheets to be raised on departure brought forward (only applicable to paper consignment notes).			- Contractual carrier - Successive carrier
92	C	Total of supplementary sheets brought forward charges due: Total of charging sections shown on supplementary sheets, to be raised on arrival brought forward (only applicable to paper consignment notes).	- Consignee		- Contractual carrier - Successive carrier
93	C	Grand total of the amounts to be raised on forwarding			- Contractual carrier - Successive carrier
94	C	Grand total of the amounts to be raised on arrival	- Consignee		- Contractual carrier - Successive carrier
99	0	Customs endorsements: Box reserved for endorsements by customs authorities.	- Contractual carrier - Successive carrier - Consignor - Consignee		- Customs authorities

2.1.2 Electronic Consignment Note

The Telematics Applications for Freight (TAF) is a functional subsystem of the rail system applications for freight services, including information systems (real-time monitoring of freight and trains), marshalling and allocation systems, reservation,

payment and invoicing systems, management of connections with other modes of transport and production of electronic accompanying documents.

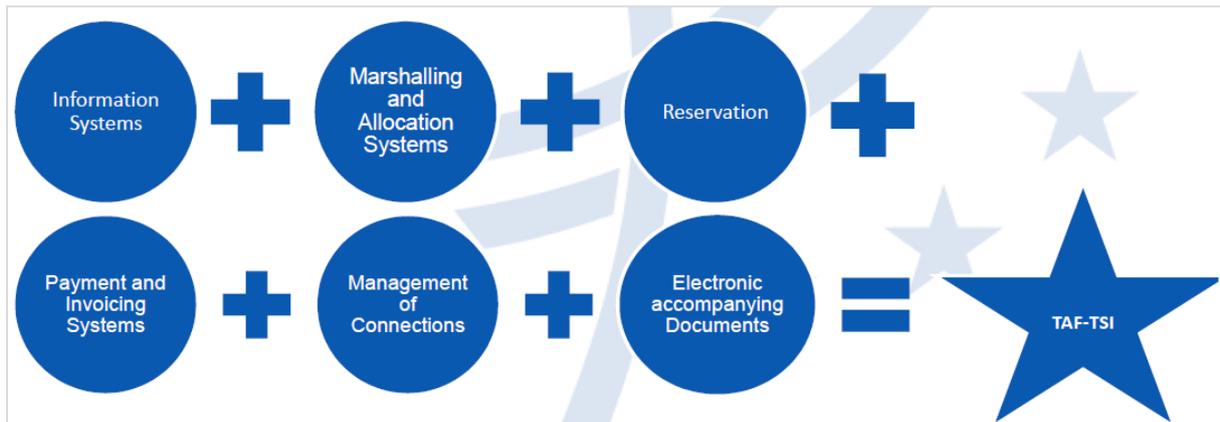


Figure 2. Telematics applications for freight services. **Source:** European Railway Agency

The TAF-TSI Regulation was published as a Commission Regulation (EC) 62/2006 based on the technical specifications for interoperability relating to the telematic applications for freight subsystem of the trans-European conventional rail system was adopted on 23 December 2005 and published in the Official Journal of the European Union on 18 January 2006. It was amended by Commission Regulation (EU) No 328/2012 of 17 April 2012, published in the Official Journal of the European Union on 18 April 2012.

This legislation specifies how to exchange information about:

- Freight Transport Information Systems (Online track and trace of goods and trains).
- Selection and assignment systems (assignment of train composition systems).
- Reserve systems (railway slot reservation systems).
- Intermodal exchange and documentation management (rail consignment note).

A technical specification for interoperability (TSI) for telematics applications for freight services was drafted by the European Railway Agency (ERA). The Agency was set up in 2004 to help to create an integrated railway area by reinforcing safety and interoperability. This Agency acts as the system authority for the European Rail Traffic Management System (ERTMS) project, which has been set up to create unique signalling standards throughout Europe.

In the field of interoperability, the Agency gives support on technical matters to the implementation of the European Community legislation on Railways. ERA promotes legislation relating to:

- Railway undertakings.

- Infrastructure managers.
- Railway operators.
- Wagon owners companies.
- Clients.

One of the main ERA's objectives is to produce proposals for Technical Specifications for Interoperability (TSI) related to subsystems like infrastructure, energy, rolling stock, telematic applications and operation in accordance with mandates given by the Commission. Among the main ERA's objectives, it is worth highlighting the technical specifications proposed for interoperability relating to the telematic applications for freight subsystem of the trans-European conventional rail systems.

The Telematics Applications for Freight (TAF-TSI) sets the functional and technical standards for exchanging harmonised information between infrastructure managers, railway undertakings and other stakeholders.

TAF-TSI functions require defining:

- When (at a specific point in the process)?
- What (information and content) has to be sent to?
- Whom (partner or partners).
- How (which format) the data must be exchanged between the partners.
- Where (reporting point) location under contractual agreement where the information must be exchanged between the partners.

TAF-TSI defines:

- What do we want to communicate (Defined TAF-TSI messages)?
- How we want to communicate it (TAF-TSI message structure).
- When do we want to communicate it (TAF-TSI process)?
- With whom do we want to communicate (TAF-TSI process)?
- Where is the location we are talking about (TAF-TSI Location Reference F.)?

TAF-TSI reduces IT complexity for single players:

- Who are my partners?
- Where are my partners?
- How to connect to my partner.
- How to translate some existing messages.

TAF-TSI prescribes protocols for data exchange of:

- Consignment note.
- Path request.
- Train preparation.
- Train running forecast.

- Service disruption information.
- Train location.
- Shipment estimated time of interchange/arrival.
- Wagon Movement.
- Interchange Reporting.
- Data Exchange for Quality Improvement.

TAF-TSI prescribes the mandatory use of a so called “common interface”, which is mandatory for all Railway Undertakings (RU) and the Infrastructure Manager (IM):

- The appropriate formatting, conformity checking, encrypting, signing, addressing and decrypting of the exchanged messages.
- The appropriate access to all the data required according the TSI within each RU, IM, Customer, etc, whether the relevant databases are central or individual.

The communication between the Railway Undertaking and the Infrastructure Manager includes the following functionalities:

- Long-term planning.
- Path request on short notice.
- Train preparation.
- Train running forecast.
- Service disruption information.
- Train location.

The communication between the Lead Railway Undertaking (LRU) and the Infrastructure Manager includes: consignment note data, exchange of information concerning ETI/ETA (Estimated Time of Interchange/Estimated Time of Arrival) calculation and interchange reporting and wagon movement.

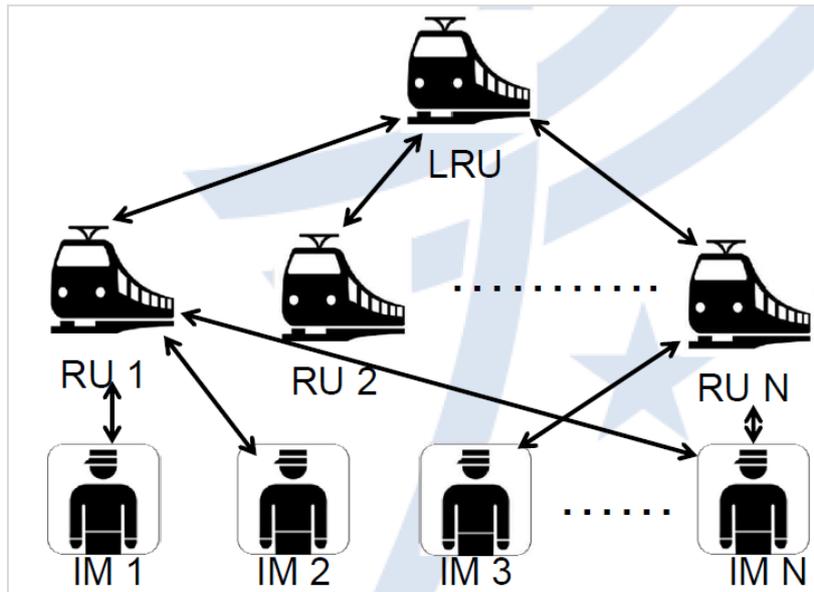


Figure 3. TAF-TSI LRU/IM Communication. **Source:** European Railway Agency

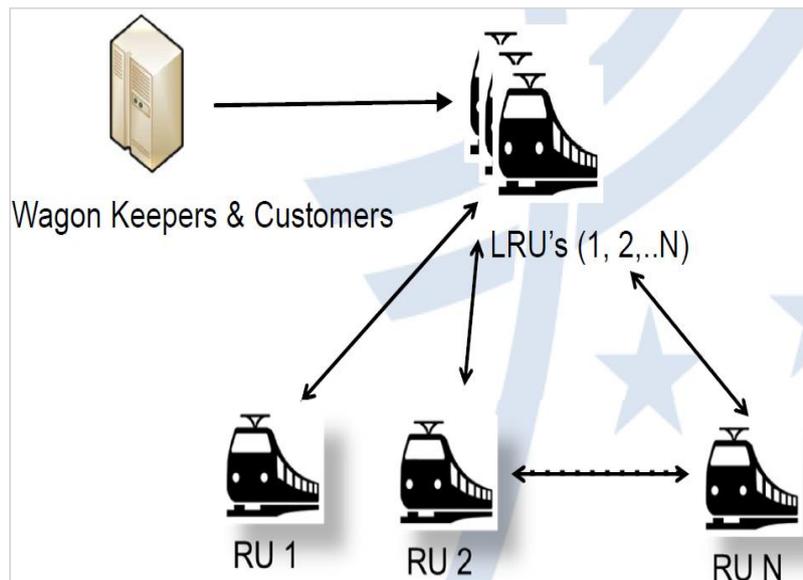


Figure 4. TAF-TSI LRU/RU Communication. **Source:** European Railway Agency

Focusing on the electronic consignment note data, which is the basis for the wagon orders, the following Table presents the relevant consignment note data and indicates, whether these data are mandatory or optional. It also shows which data came from the shipper and which data must be supplemented by the Railway Undertakings (RU) having the contract for the transport with the shipper. This data provides the basis of the information that must be shared among all actors in international operations.

The data of the wagon orders are listed in the different rows for the various roles of an RU and marked, whether they are mandatory or optional. A grey field means that this data element is not relevant and not foreseen for transmission from LRU (Lead Railway Undertaking) to an RU.

The consignment note data is delivered by the consignor to the LRU, who must supplement this data for the wagon orders. The available Information on Consignee side is marked with Y = available, P = perhaps also available.

Table 2. Electronic Consignment Note (ECN). **Source:** TAF-TSI Regulation, Annex A index 3 - Telematic applications subsystem for freight services: the consignment note data and description

		Data in Consignment note (consignor to LRU)		Wagon Order Data (M = mandatory, O = optional)			
Consignment Note Data	Description	Consignor	LRU	ORU	TRU	DRU	Consignee
Consignor and Consignee Information							
Consignor	Party which, by contract with a Service Integrator, consigns or sends goods with the carrier, or has them conveyed by him. Synonyms: Shipper, Goods sender.	M	M	M			Y
Consignor ID	Party identification of the consignor.	M	M	M			Y
Consignment reference	Identification of a document prepared by the shipper which evidences a contract for the transportation by a carrier of one consignment from named place of acceptance to a named place of delivery.	O	O				P
Consignee	Party by whom the goods are to be received. Synonym: Goods receiver	M	M			M	Y
Consignee ID	Party identification of the consignee.	M	M			M	Y
Contractual information							
Contract number customer – Lead RU	Contract of carriage between Consignor and Service Integrator.	M	M				
Freight payer	Party responsible for the payment of freight.	M	M				
Code for customs treatment		O	O				
Franco - terms		O	O				P
Routing information (description)	Text for Origin, interchange points, destination	M	M	M	M	M	
Consignment identification							
Booking number	Identification of a document issued by a carrier to confirm that space has been reserved for a consignment in means of transport.	O	O				
Waybill number	Reference number assigned to a waybill. Equal to Voyage number when used for maritime stage. Synonym: Consignment note number.	M	M	M	M	M	Y
Waybill type		M	M	M	M	M	Y

Transportation unit, size and type	Characters (letters and/or numbers) which identify the transport unit. Examples: container, wagon, trailer, cassette, unit load device, etc.	M	M	M	M	M	Y
Unit capacity used (e.g. loaded, empty)	Code to indicate to which extent the equipment is loaded or empty.	M	M	M	M	M	Y
Transport unit dimensions (gauge)	Dimensions of a transport unit. Information is given if transport unit size and type does not provide required measurement.	M	M	M	M	M	Y
Free text, additional instructions	Free text area for other information / instructions.	O	O	O	O	O	P
Free text, delivery instructions	Instructions regarding the delivery of the cargo.	O	O			O	P
Free text, handling instructions	Free text of any special handling required.	O	O	O	O	O	P
Free text, transport instructions	General information regarding the transport of the cargo.	O	O	O	O	O	P
Place and Time Information							
Goods description	General description of the nature of the goods. Examples: paper, pulp, board, plywood, timber, etc.	M	M	O	O	O	Y
Load Type	Code list for products used by customs.	M	M	M	M	M	Y
Gross weight of load	Booked/actual total weight (mass) of goods, including packing but excluding the carrier's equipment.	M	M	M	M	M	Y
Volume	Volume of the goods.	O	O	O	O	O	Y
Package type		M	M				Y
Number of packages	Total number of packages loaded.	M	M				Y
Last goods description		M	M				Y
Dangerous goods description (Code)	RID remarks	M	M	M	M	M	Y
Wagon Information							
Wagon number		M	M	M	M	M	Y
Transportation unit number		M	M	M	M	M	Y

Release date/time	Date/time when the goods are expected to be despatched or were despatched	M	M	M			Y
Date of Original Departure	Date (and time) of departure of means of transport.	M	M				Y
Place of Original Departure		O	O				P
Station of original Departure - Station code type - Station code		O	O				P
Original Country of Departure		M	M				Y
Place of Departure - Station code type - Station code	Place from which a means of transport is scheduled to depart or has departed.	M	M	M			Y
Country of Departure	Country from which the means of transport is scheduled to depart or has departed.	M	M	M			Y
Requested date of Delivery	Date/time when the customer requests goods to be delivered (handed over) to the delivery party at the place of delivery.	M	M	M	M	M	Y
Place of Destination - Station code type - Station code	Place at which the means of transport is due to arrive or has arrived. Synonym: Place of arrival	M	M			M	Y
Country of Destination	Country at which the means of transport is due to arrive or has arrived. Synonym: Country of arrival	M	M			M	Y
Place of Ultimate Destination - Station code type - Station	Place whereto goods will ultimately be delivered.	O	O			O	P
Country of Ultimate Destination	Country whereto goods will ultimately be delivered.	M	M			M	Y
Vessel name		O	O	O	O	O	P
Closing date and time	Closing time indicates the latest date/time when cargo is to be available for port operator for cargo loading preparations. Closing time is subject to the stowage mode.	O	O	O	O	O	P
		O	O		O	O	O

Contract number LRU – RU		M	M	M	M	
Previous waybill number		o	o	o	o	
Previous waybill type		o	o	o	o	
Previous wagon number		o		o	o	
Routing information						
Previous RU		M		M	M	
Next RU		M	M	M		
Next Interchange station requested		M	M	M		
Date / Time of Interchange to next RU		M	M	M		
Essential wagon information						
Current max. permissible speed of wagon		M	M	M	M	
Wagon Gauge		M	M	M	M	
Wagon weight empty		M	M	M	M	
Number of axles		M	M	M	M	
Braking system		M	M	M	M	
Brake weight		M	M	M	M	
Wagon Length over buffer		M	M	M	M	

2.2 Current Situation

Many small and medium-sized rail undertakings in various EU countries are not producing specific rail consignment notes for every shipment they transport. In some cases, loading lists for the whole train are adapted including information on the price paid by the customer and insurance conditions for the freight transported. This extended loading list is considered the rail consignment note for the train. This practice may entail certain legal problems as a rail consignment note should exist for every shipment transported by a train.

2.3 Existing Solutions

The following section addresses the main systems/applications developed supporting the implementation of TAF-TSI providing consignment note information at European level.

2.3.1 ORFEUS

ORFEUS (Open Railways Freight EDI User System) is an information system developed and operated by RAILDATA, which is an international organisation of European Cargo Railway Undertakings. RAILDATA was established as a special group of the International Union of Railways (UIC) and managed by the General Assembly in which all members

are represented. The aim of this organisation is to develop, implement and run IT services as cost-effectively as possible and in total compliance with the rules governing competition, improving data exchanges and thereby promoting rail freight traffic development between Railway Undertakings in Europe.

There are 17 European railway undertakings within RAILDATA including subsidiaries now.

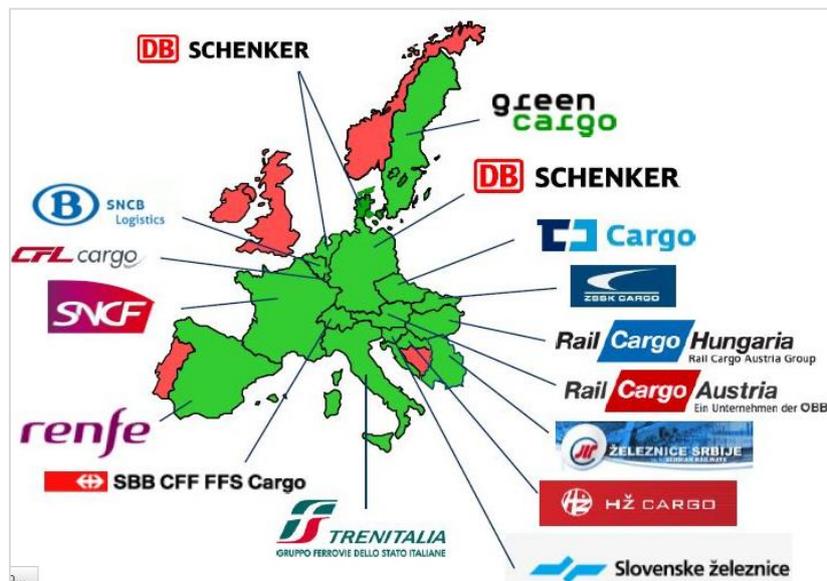


Figure 5. RAILDATA members. **Source:** TAF TSI Regulation, Annex A index 3 - Telematic applications subsystem for freight services: the consignment note data and description

RAILDATA runs a centralised platform from where all the information merges and is converted between different message types. This central platform is also responsible for the processing and forwarding of data, calculation of results immediately sent to all partners, maintaining the data and making the calculation results visible and downloadable via the website.

The objectives previously mentioned are covered by three applications:

- ORFEUS (Open Railway Freight EDI System) - consignment note CIM data exchange.
- ISR (International Service Reliability) - wagon movement and status reporting.
- Use IT (Uniform System for European Intermodal Tracking and tracing) - intermodal trains status reporting.

ORFEUS was developed to act like a central information exchange system. It was designed to ensure the exchange of the railway CIM consignment notes data between the cooperating railway undertakings.

Objective

Handling of paper transport documents is very costly and presents serious technological limitations for the transport of rail wagons. As one of the first steps for the paper-less technology, major European railway undertakings installed information systems to collect and process data about the consignments on national level. To do the same for international traffic, the central information exchange system called ORFEUS was developed. It was designed to ensure exchange of the railway CIM consignment notes data between the co-operating railway undertakings. Now it allows to exchange the CUV wagon notes data for empty wagons as well.

ORFEUS opens the possibility to re-engineer the freight logistics and takes the first step towards the paperless technology, which improves the speed and reliability of the international freight rail transport system to allow significant cost savings.

Available functionalities

- The Sending of the international consignment note (CTD) from the LRU to the CDS (Central Data System).
- Switch of the international consignment note (CTD) from the CDS to the other RUs involved in the transport.
- Sending of the UTD (Update Transport Dossier) of the international consignment note from the LRU (Lead Railway Undertaking) to the CDS.
- Switch of the UTD of the international consignment note to the other RUs (Railway Undertaking) involved in the transport.

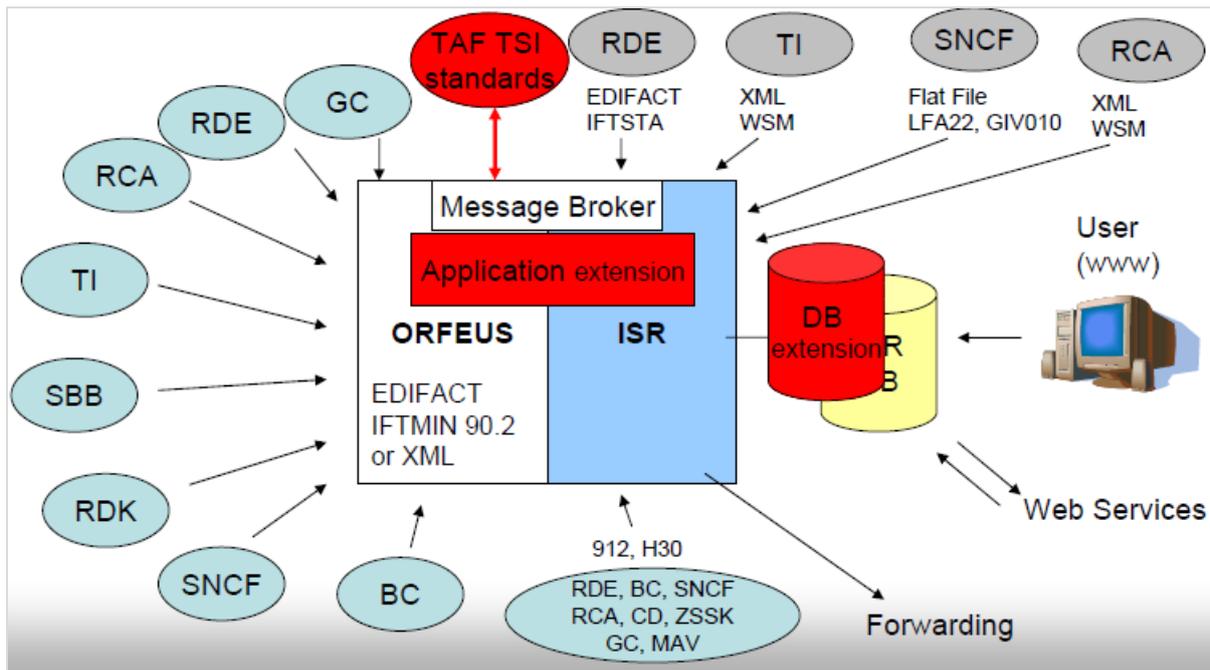


Figure 6. How ORFEUS works in line with TAF-TSI. **Source:** Own elaboration
System overview

The system ensures that CIM consignment notes and CUV wagon notes data are exchanged with reliability between railways undertakings (RU) involved in the transportation process using a Central Data System (CDS).

CDS acts like a message broker for collection and distribution of information, including specific logic and verifications. This software was designed by LUSIS, French IT supplier using their TANGO platform.

Currently, every railway undertaking is connected to their respective National Information Systems (NISes). NIS is commonly used by information systems of freight railway companies, which covers both commercial and production functions.

Railway undertakings feed its central system; therefore, customers (consignee, consignor) have no direct access to this central system and for each international consignment a file is created at the CDS.

Exchanged messages

In the system analysed, the transmission of information relies on a standard message structure that has been continuously evolving over time. This message is developed in EDIFACT (Electronic Data Interchange For Administration, Commerce and Transport) and XML (eXtensible Markup Language).

EDIFACT message

The system employs IFTM (International Forwarding and Transport Message). Although EDIFACT messages were created using the IFTM guidelines, they are railway specific.

At present, several functional messages have been derived from the IFTM framework and they could be used for freight rail transport purposes. Some of them are:

The message IFTMIN for Instruction is defined as “A message from the party issuing an instruction regarding forwarding transport services for a consignment under conditions agreed, to the party arranging the forwarding and/or transport services” (1 EDI Source, Inc., 2013). This instruction results in a transport contract for a consignment and is primarily meant for administrative purposes. It will be the message from shipper to carrier or forwarder containing the final details of the consignment for which services are provided. The instruction message is the one and only message, which results in the actual contract, which can either be a document or an electronic contract. (MIST working Group, 2000, p. 86)

The message for booking or IFTMB include (1 EDI Source, Inc., 2013):

- *IFTMBP or Provisional booking.* “A message from a party requesting space and/or giving brief details of a planned consignment for forwarding and/or transport services to the party providing those services. In this message, the conditions under which the planned transport should take place can be given”.
- *IFTMBF or Firm booking.* “A message from a party definitely booking forwarding and/or transport services to the party providing those services. The message will contain the conditions under which the sender of the messages requires the services to take place”.
- *IFTMBC or Confirmation booking.* “A message from the party providing forwarding and/or transport services to the party booking those services, giving the confirmation information to the booking of the consignment concerned. A confirmation might read that the booking of a consignment is accepted, pending, conditionally accepted or rejected. The conditions under which requested services take place may be given in this message”.

The message IFTMCS for Contract Status: “A message from the party providing the transport/forwarding services to the party that issued the instructions for those services stating the actual details, terms and conditions (charges when applicable) of the service and of the consignment involved. In addition it can be used for the exchange of contract information between carriers mutually”.

The message IFTMAN for Arrival Notice: “A message from the party providing forwarding and/or transport services, to the party such as has been indicated in the contract, giving notice and details of the arrival of the consignment”.

The following schema represents a general example of how these standard messages can

be used in order to manage the information related to rail consignment notes through international rail freight corridors involving different railway undertakings and using the ORFEUS CDS.

Table 3. ORFEUS - International Forwarding and Transport Message. Source: Multi Industry Scenarios for Transport (MIST working Group, 2000)

Step	Customer	1st Railway	Intermediate Railway	Last Railway	CDS	Comments
0	X >>> DATA >>> X (in any format, electronically or paper, under development to join the system)					Information forwarded to the carrier. Not implemented in ORFEUS
1		X ----->	IFTMIN ----->		X	Creation of the Transport Dossier (CTD)
2		X <-----	IFTMCS <----- (X) <-----		X	General response message (GRM)
3		X ----->	IFTMCS ----->		X	Updating of the transport dossier (UTD)
4		X <-----	IFTMCS <----- (X) <-----		X	General response message (GRM)
5		X ----->	IFTMAN ----->		X	Border Crossing message (BCR)
6		X <-----	IFTMCS <----- (X) <-----		X	General response message (GRM)
7			X ----->	IFTMCS ----->	X	Updating of the transport dossier (UTD)
8			X <-----	IFTMCS <----- (X) <-----	X	General response message (GRM)
9			X ----->	IFTMAN ----->	X	Border Crossing message (BCR)
10			X <-----	IFTMCS <----- (X) <-----	X	General response message (GRM)

Step	Customer	1st Railway	Intermediate Railway	Last Railway	CDS	Comments
11				X ---> IFTMCS ---> X		Updating of the transport dossier (UTD)
12				X <--- IFTMCS <--- X		General response message (GRM)
13				X ---> IFTMAN ---> X		Border Crossing message (BCR)
14				X <--- IFTMCS <--- X		General response message (GRM)
15				X <----- IFTMCS <----- (X) <----- (X) <-----		Freight Calculation parameter (UTF)
16	X ← Notification ← X (in any format, electronically or paper, under development to join the system)					Notification of freight arrival. Not implemented in ORFEUS

XML message

In 2005, a new XML (eXtensible Markup Language) interface was developed to allow data exchange with this new standard (using the XML Schema). The CDS ensured the format conversion from XML to Edifact and vice versa. This XML-message was designed also with the aim to reflect all the changes required by the new COTIF.

The Electronic Consignment Note XML message (**ECN XML** message) is the most modern one. The format was developed in the e-Rail Freight project and it is supported to enable the electronic consignment note exchange. The ECN-xml message is capable of carrying 100 % of the consignment note data and matches the requirements of the Electronic Consignment Note defined by the International Rail Transport Committee (CIT). This message format is used for several functions depending on the event and message flow type:

- PRN: Prior Notification. It is used at the beginning of an ECN transport when the shipping carrier sends the prior notification as preannouncement to all participating carriers (as far as they are able to process an ECN).
- ECN: Electronic consignment note. It is the legally binding document. This message is sent up to the interchange point where the transport is handed over to the next carrier involved in the transport (being ECN capable).

- PCN: Printed consignment note. This message is sent up to the interchange point where the transport and the printed consignment note are handed over to the next carrier involved in the transport. (The printout is also a legally binding document).
- INFE: Information ECN. This message has only informative character and can be used to inform other participating carriers about changes before hand-over of the ECN.
- INFP: Information PCN. This message has only informative character and can be used to inform other participating carriers about changes before hand-over of the PCN.
- AOD: Advice of delivery. This message is used to inform the contractual carrier about the delivery of goods to the consignee.
- ACK: Acknowledgement of hand-over.
- NACK: Refusal of hand-over. If the reception of an ECN is being refused, it is possible to enter the reason of rejection in the header of the message.
- HNDO: Hand Over Information: This MessageType will only be created by the central application to inform other participating carriers about the successful hand-over of the transport (independent, if ECN or PCN). Exception: a carrier following an ORFEUS only carrier will be informed about the hand-over of a printed consignment note by an INFP message.
- CANCEL: The CANCEL message can only be sent by the contractual or the shipping carrier BEFORE the first hand-over of the ECN. By doing so, all participating carriers will receive a DEL message to inform them about the cancellation of their part of the transport.
- DEL: This message is being created by the central application, only. The receiving carrier is being informed, that his part of the transport has been cancelled.

The CTD XML message is an older xml-message which is used only for forwarding purposes. It does not contain all the fields of the CIM consignment note and it is not authorised by the CIT and therefore, it is not possible to use it as an electronic consignment note. It is in use in the ORFEUS community but only as a forwarding for paper accompanied transports. This message format is used for creation (CTD) and update (UTD) of the transport dossier and it has its equivalents in new ECN XML formats (ECTD, EUTD).

The following schema represents a general example how these standard messages can be used in order to manage the information related to rail consignment notes through international rail freight corridors involving different railway undertakings and using the ORFEUS CDS.

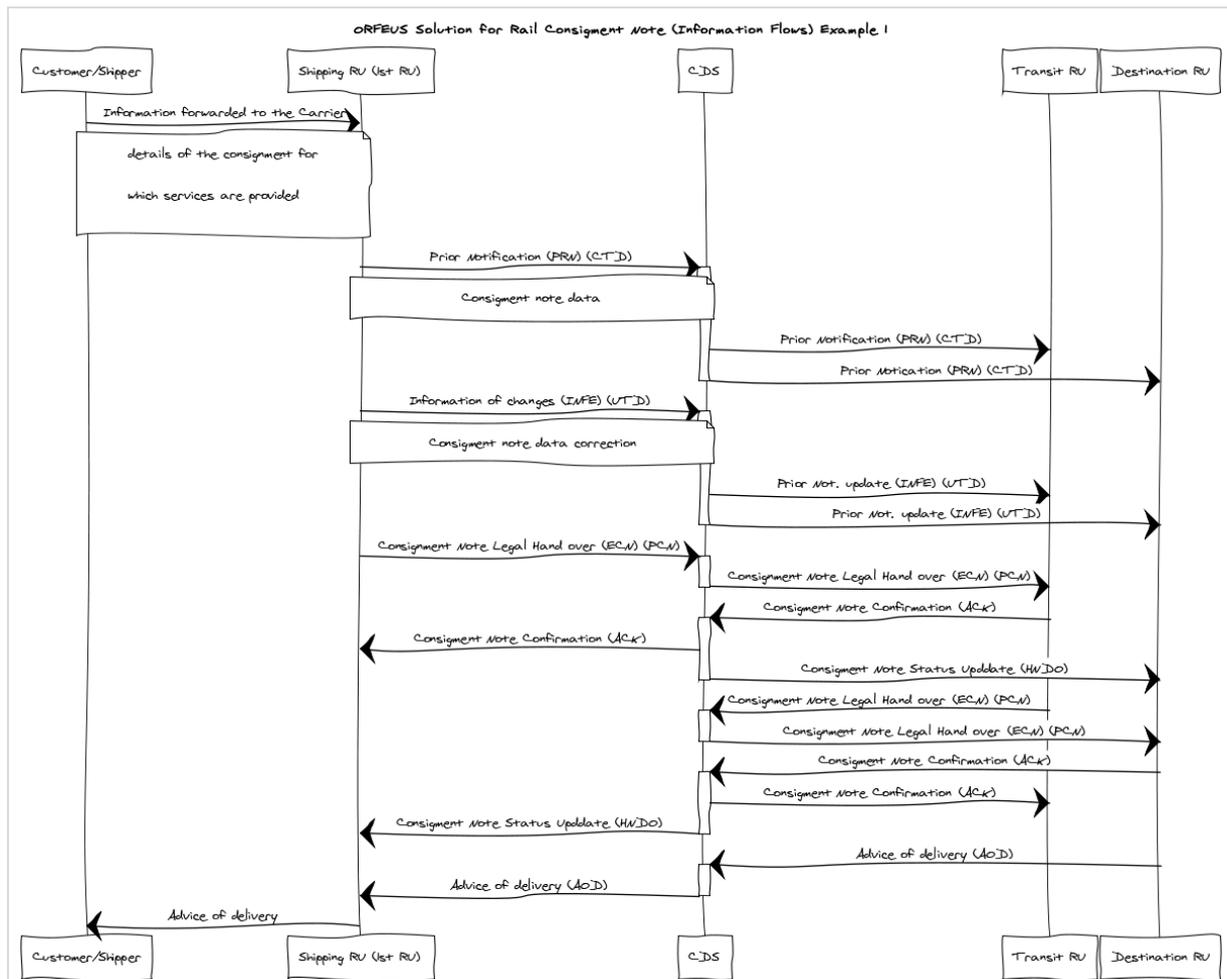


Figure 7. ORFEUS messages for international rail freight corridors. **Source:** Multi Industry Scenarios for Transport (MIST working Group, 2000)

Communication

ORFEUS uses the FTP (file transfer protocol) for transmission of messages. FTP is an Internet based standard (RFC 959). For specific needs of the distributed application, special FTP modules were developed.

To be connected to the network, each national system needs to install the specific Lasis FTP client to communicate with the CDS.

The communication infrastructure used is mostly the Hermes VPN (Virtual Private Network) provided by HIT Rail. Raildata has direct access to Hermes via fully duplicated VPN site in Aubervilliers / Paris.

Message scenarios

The ORFEUS application supports several message exchange scenarios, the Create Transport Dossier (CDT), the Electronic CDT (ECDT), the Paper Consignment Note (PCN)

and the Electronic Consignment Note (ECN).

Table 4. ORFEUS message scenarios. **Source :** Own Elaboration

Scenario	Transmission of message	Updates
CTD	Paper (priority) + Electronic	Only the CTD creator
ECTD	Electronic	Only the CTD creator
PCN	Paper (priority) + Electronic	Actual carrier
ECN	Electronic	Actual carrier

CTD Scenario

This scenario consists of a simple forwarding of consignment note data, but at the same time being forwarded to all participating railway undertakings. In this scenario, the first RU is the only one that is allowed to update the Create Transport Dossier (CTD).

The paper consignment note has to accompany the transport in CDT scenario. Therefore this represents the old traditional scenario, which is being replaced with ECDT or PCN/ECN scenarios.

The forwarding RU collects data about international transport (majority of the CIM consignment or CUV wagon note information), then its national system (NIS) sends the data to the CDS using the Create Transport Dossier (CTD) message.

A copy of the CTD message is sent by the CDS to all other railway undertakings involved in the transport. The CDS covers also filter function so the distribution rules may be adjusted. If any change occurs with the consignment, railway undertaking which sent the CTD can send Update Transport Dossier (UTD) message. A copy of the UTD message is sent by the CDS to all other railway undertakings involved in the transport.

ECTD Scenario

ECTD scenario for message exchange is similar to the present CTD one, but it uses the new ECN message format.

It enables to transmit complete CIM/CUV note information content using the ECN format. Only the dossier creating carrier is allowed to communicate updates of the transport information because it is not yet possible to determine carrier who is in the custody of the goods.

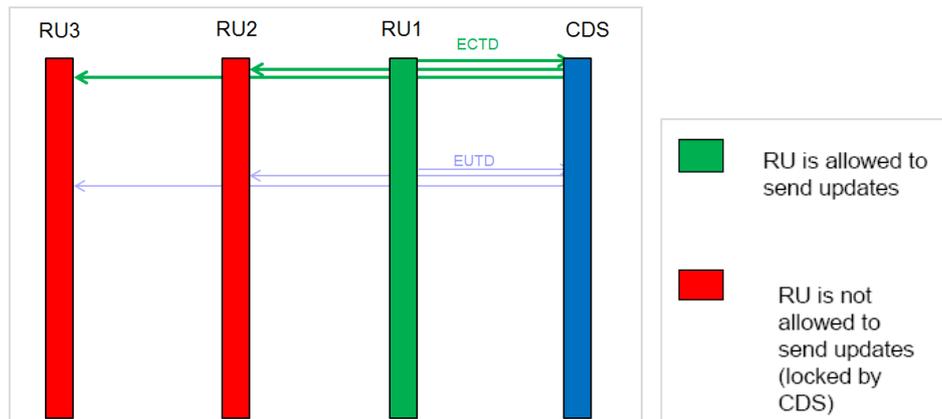


Figure 8. ECTD Scenario. Source: RAILDATA

PCN Scenario

Similarly to the previous ECTD scenario, the hand-over messages are also added and thus the central system is able to identify currently responsible carrier. As a result, the carrier who is in the custody of the goods is allowed to apply updates to the transport information. In this scenario, information runs in parallel with paper consignment notes, but paper still has preference over the information.

ECN Scenario

In the ECN Scenario, the electronic messages acquires a more relevant role. Instead of a paper consignment note, an electronic consignment note, handled by the CDS of Raildata, accompanies the transport. These messages are exchanged in a similar way to the PCN scenario, but the paper consignment notes are skipped. Therefore the information (messages) is the only and legally binding data source about consignments and their hand-overs.

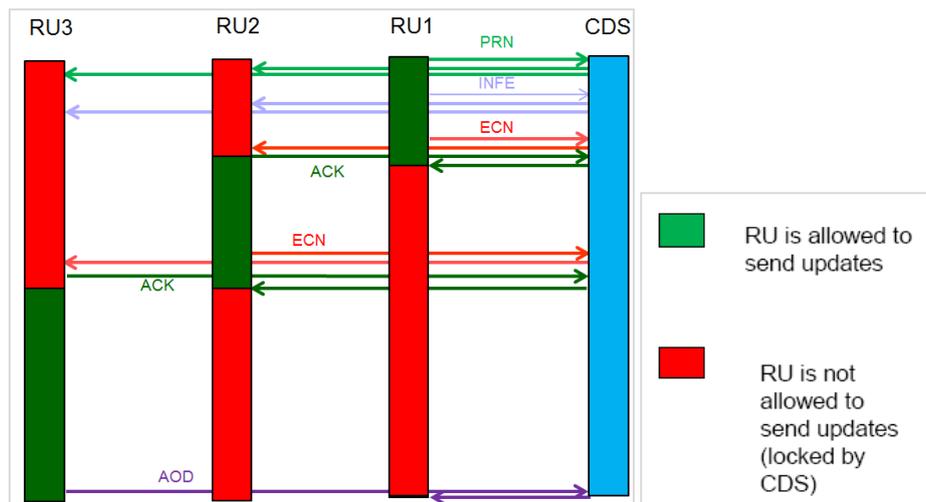


Figure 9. ECN Scenario. Source: RAILDATA

Present usage

ORFEUS is in real and daily production. Consignment and wagon note data are exchanged between the "national systems" on a regular basis, using the central application (CDS). It runs in the computer centre in Aubervilliers with hot backup centre in Paris, both provided by LUSIS. Stability of both the central system and national applications is excellent thanks to service management and redundancy of all components.

As an overview of the amount of data managed by the system, ORFEUS CDS has exchanged between members during the month of October 2013 more than 89,000 messages with consignment notes, and, yearly processes more than about 2.4 million messages.

The ECN format and flow is used between DBSRD (Deutsche Bahn) and SNCF Fret (Société Nationale des Chemins de Fer Français) already for bilateral transports. SNCF and DBSRDE run paperless and also transports from France transit via Germany and vice versa, with print of consignment orders before leave of the "ECN area" (it means mixed ECN and PCN scenario).

TI (Trenitalia) is in bilateral discussion with SNCF and plan first testing to take place around April/May 2014. And B-Logistics (Belgium) has announced to be ready for ECN by end of 2013 with aim to start run paperless with DBSRDE and SNCF.

Depending on the realisation stage at member railway undertakings, ORFEUS will support introduction of paperless traffic across Europe.

2.3.2 CROBIT

CroBIT (Cross Border Information Technology) was realised as a European project involving 11 partners. Although the project is closed, a tested system is available. Many TAF TSI functions are available and additional ones can be realised (using a built-in mapping tool) according to needs of stakeholders in subsequent projects. The “CroBIT Economic Interest Grouping”, as the successor of the CroBIT Consortium, is willing to offer its functionality as a basis for TAF TSI implementation.

CroBIT co-operates with two major systems (RAILTRACE and INTELLIGRATOR), which represents a development effort and application experience of several years.

The purpose of CroBIT is to enhance railway performance by providing:

- Better visibility of goods.
- Enhanced service reliability.
- New customer services.
- Interoperability among railways.
- Higher market share of rail freight.

To reach these general goals, CroBIT concentrated on the realisation of functions not available from other projects and devised an architecture facilitating the integration of proven existing systems. Data can be provided (in any format) by individual RUs, IMs, others and/or related common systems (i.e. ISR or EUROPTIRAILS).

Consignment Notes data

CroBIT provides capability to import Consignment Notes data in different formats, including manual input. It provides hierarchical handling of data on the levels of consignment, ITU, wagon, train. This function requires as input Consignment, ITU, wagon, train, dangerous goods and customs declarations. The output are wagons of a train, link (consignment/ITU/wagon/train) of various consignment notes of different RUs Interfaces exists to consignment note management systems, an interface to ORFEUS is possible. This function delivers for the Consignment Note data CroBitxml to the linked systems.

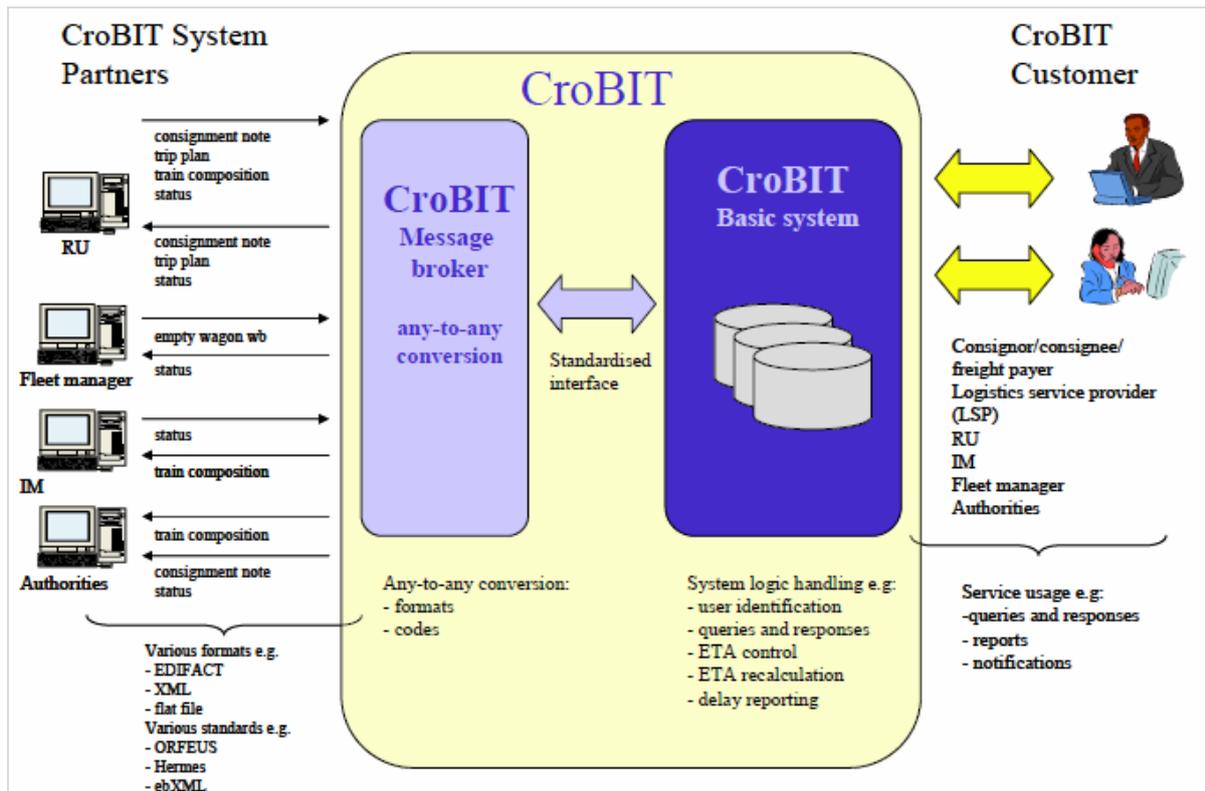


Figure 10. CroBIT Unique Interface Architecture

2.3.3 RAILTRACE

RailTrace is a Railway oriented consignment and wagon tracking and tracing system for domestic and international traffic. Today RailTrace covers transports to and from Finland as well as Finnish domestic traffic. It could be expanded to include domestic or international traffic of other railways. Russian Railways (RZD) is the biggest partner providing consignment note and status information to RailTrace. Electronic information exchange covers the traffic between RZD and VR. Information about incoming consignments to Finland from third countries (other CIS and Far East railways) is also forwarded to RailTrace.

The functional specification of RailTrace system started in September 1997. After extensive interviews among end customers, logistic service providers and operative sales personnel of various railways involved in international traffic market requirements were specified. RailTrace concept is based on these requirements. The system was fully operational in December 2000. The development of the system is an ongoing procedure depending on the feedback from the users such as end customers and wagon keepers. New features, queries and data fields are developed and added constantly depending on the users' needs.

The main processes and related functions of RailTrace are:

- Trip plan creation.
- ETA calculation, Trip plan maintenance and follow-up (See below).
- Tracking and tracing related queries, responses and reports.
- Exception reporting.
- Post-Trip historical data analysis.

Consignment Note data

RailTrace contains data information of all railway transport routes and duration between nominated stations. When the system receives initiating consignment data (e.g. electronic Consignment Note), this particular consignment is connected to a specific trip plan that calculates ETA and other passing events (e.g. ETIs).

This Consignment Note Trip plan is used for tracking and tracing as well as ETA calculation at a later stage. This function requires the Consignment Note (e.g. rail waybill) in electronic format as an input. The output is the Consignment Note Trip plan.

Data volume: No restrictions, depends on the number of Consignment Notes.

Interfaces to existing functions: Consignment Note Trip plan is used for

- RailTrace tracking and tracing services.
- ETA calculation and Trip plan maintenance and follow-up.
- Exception reporting.

3 Interoperability of Simplified Rail Transit Procedures in Cross-Border Operations

This section analyses the requirements for achieving interoperability of simplified rail transit procedures in cross-border sections and mutual recognition of these simplified procedures between Customs in different Member States.

3.1. The European Framework

The European Commission amended, on 20 August 2012, Regulation (EEC) No. 2454/93 – CCIP (Customs Code Implementing Provisions) laying down provisions for the implementation of Council Regulation (EEC) No. 2913/92 establishing the Community Customs Code (CCC). The CCC compiles the rules, arrangements and procedures applicable to goods traded between the European Community (EC) and non-member countries.

The amendments concerns annexes 30a (Data requirements for entry and exit summary declarations and for simplified procedures), 37 (Single Administrative Document (SAD) explanatory notes), 38 (Codes to be used in the forms) and 44c (Goods involving higher risk of fraud) of the CCIP.

Article 372 of Regulation (EEC) No. 2454/93 highlights the importance of simplified procedures specific to goods carried by different modes of transport (by rail or large container, by air, by sea or moved by pipeline). Regarding rail traffic simplifications, three aspects to be considered:

- **Documentation.** According to the Article 414 of Regulation (EEC) No 2454/93 the CIM consignment note must be equivalent to a Community transit declaration.
- **Guarantees.** Article 92 of Regulation (EEC) No. 2913/92 sets out that no guarantee needs to be provided for operations carried out by the railway companies of the Member States.
- **Responsibility.** The Customs responsibility of the shipper is taken by the railway undertaking.

The scope of the simplified procedures for transit is based on Article 97.2 of Regulation (EEC) No. 2913/92 which provides that Member States shall have the right, by bilateral or multilateral arrangement, to establish between themselves simplified procedures consistent with criteria to be set according to the circumstances and applying to certain types of goods traffic or specific undertakings. Also, this article establishes that each Member State shall have the right to set out simplified procedures in certain circumstances for goods not required to move to the territory of another Member State.

3.2. Current Situation

Currently, international rail transit relies on a transit document and is supported by NCTS (New Computerised Transit System) of the European Union.

After electronically submitting the document, it is subjected to a filter system that determines a number of things including, whether the goods can be loaded onto the train and leave the port area, whether or not more documentation is required for the goods and whether it needs to be subjected to a physical inspection.

Once the formalities at the port of origin are completed, the customs office at the starting point of the transit sends a message to the office of destination and starts counting the maximum transit time from origin to destination.

Upon arrival at destination, the transit is only considered complete once the goods and the associated documentation are presented to the office at the destination. However, in order for the transit operation to be completed, the office of destination must communicate

electronically to the origin that the goods have arrived. This must then be verified by the home office insuring that the goods that have arrived at destination coincide with the information about the freight that departed at the origin.

The main drawbacks of the current situation are:

- The importer needs to have a correspondent at the intermediate port in order to provide any additional information required for the transit of the goods or in case the goods are required to be physically inspected. This is an expensive operational requirement for the importer.
- The possibility that documentation that is requested is only possessed by either the importer or exporter.
- The need for a guarantee that covers the total amount of customs duties and other taxes applicable to the transit operation.
- If goods are due for a physical inspection, handling costs in the port areas are more expensive than they would be at destination.

3.3. Existing Solutions

Although the simplified procedure for the goods in transit transported by rail is already approved (which gives a sound legal basis), there are still many aspects to be solved for this solution to be fully adopted by the involved operators. At present, the described simplified procedure is applicable only for domestic traffic and a global solution is needed because the hinterland of the ports involved in this initiative is transnational.

3.3.1. Port of Barcelona - Zaragoza

The Port Authority of Barcelona has established a simplified transit procedure for containerised rail transport from its port towards a dry port in Zaragoza.

Containerised goods go from the port of Barcelona to the dry port in Zaragoza by a simplified procedure that does not require having a financial guarantee and additionally, the amount of information to be declared is reduced. This simplified procedure allegorically means that the vessel continues in the form of a train until its final inland destination and import customs clearance and risk analyses will take place at final destination.

Benefits of the simplified transit procedure

- Reduction of cost operations and guarantees. No need to have a financial guarantee for transporting the goods under this simplified procedure. This simplification together with the port dues discounts applied by Spanish Port Authorities to shipments entering or leaving the port via rail transport are very

important incentives to promote the use of combined sea-rail transport for containers.

- Reduction of administrative burdens. Adjournment of some Customs controls up to the point of destination.



- No need to fill in information field 33 (full harmonised code for the goods) nor field 46 (value of the goods) of the SAD declaration which simplifies the formalities as these two data elements are sometimes difficult to obtain for the operator.

Requirements of the simplified transit procedure

- This measure will only be available for those companies responsible for the transit procedure that are Authorised Economic Operators (AEO) with the authorisations of Customs simplifications and security.
- The simplified transit procedure may not be used for goods listed in Annex 44c of the CCIP (Customs Code Implementing Provisions) and goods subject to mandatory inspection at the first point of entry (BIP).

Current system for simplified transit procedure

The Spanish Customs & Excise Department approved this simplified transit procedure in the resolution of the Single Administrative Document published in the Official Journal on 17 July 2012.

The simplification offered by the Spanish Customs & Excise Department allows using a modality of NCTS (New Computerised Transit System) via an electronic SAD (Single Administrative Document) with specific and simplified characteristics.

The NCTS allows authorised consignors to:

- Create the transit declaration in their own computer system;
- Send the corresponding declaration message electronically to the office of departure without the goods having to be presented there;
- Send and receive by electronic means subsequent messages, including requests for correction of the declaration, notification of its acceptance and notification of the release of the goods.

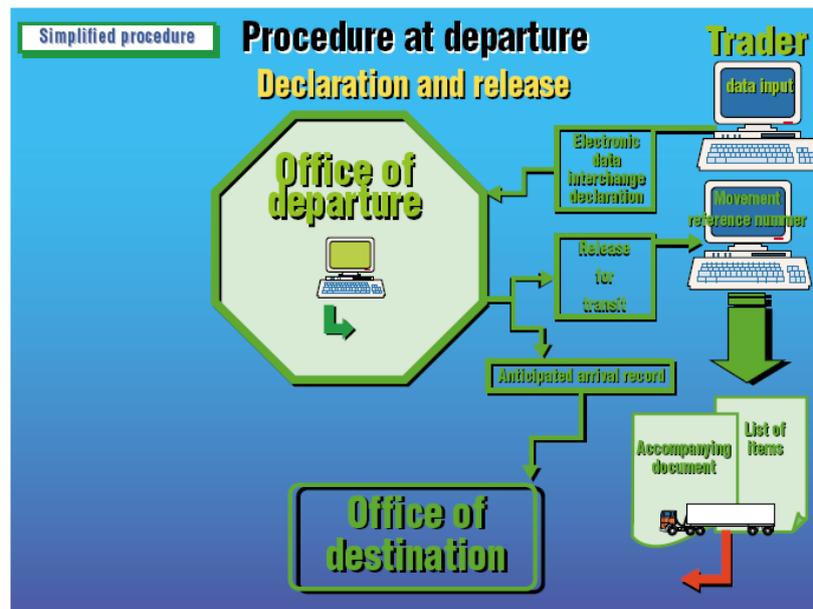


Figure 11. Simplified procedure (Authorised Consignor). **Source:** [//ec.europa.eu/taxation_customs/customs/procedural_aspects/transit/common_community/index_en.htm](http://ec.europa.eu/taxation_customs/customs/procedural_aspects/transit/common_community/index_en.htm)

The NCTS allows authorised consignees to:

- Receive the goods and the accompanying document directly at their own premises;
- Send the arrival notification message to the relevant office of destination electronically;
- Receive and send subsequent messages concerning permission to unload goods and the notification of the results of the unloading to customs electronically.

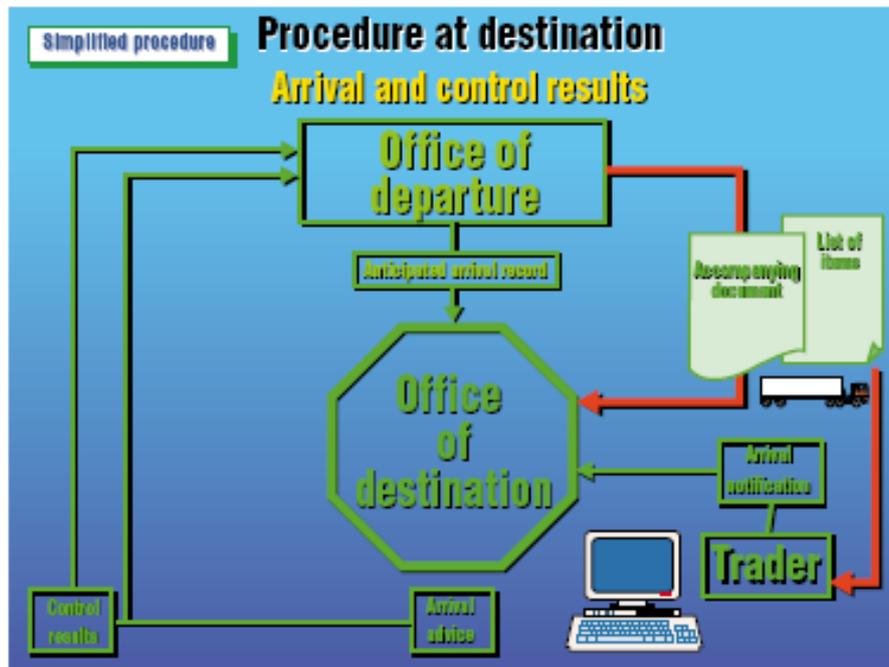


Figure 12. Simplified procedure (Authorised Consignee). **Source:** [//ec.europa.eu/taxation_customs/customs/procedural_aspects/transit/common_community/index_en.htm](http://ec.europa.eu/taxation_customs/customs/procedural_aspects/transit/common_community/index_en.htm)

The following steps summarise the simplified transit procedure for containerised rail transport from the port of Barcelona to Zaragoza. It involves a transit document for the whole train.

- Pre-arrival notification at origin: notify the port of goods coming before the train arrives.
- Arrival notification at the port.
- Risk analysis.
- Discharge summary declaration, coincides with the arrival notification.
- New risk analysis.
- The summary declaration is contrasted with a simplified T1 transit declaration.
- Once the train has arrived to Zaragoza, the T1 is contrasted with the summary declaration and the import SAD (Single Administrative Document) is made.
- New risk analysis.

4. Interoperability of Shunting Operations between Shunting Yards and Rail Port Terminals

This section provides an interoperable environment for the efficient exchange of information required for ordering and communicating shunting operations among the involved railway undertakings, railway infrastructure managers and railway (port/inland) terminals for coordinating shunting, coupling and transshipment operations executed in shunting yards and railway terminals.

4.1. Current Situation

4.1.1. Port of Valencia

At present, port rail container terminals receive information about the containers carried by a train entering the port from the origin rail terminal. They do not communicate with the last rail terminal manager –shunting terminal- (usually located in the last mile close to the port) where the train may be classified. When the container is too long to enter the port, it is divided into two or in as many sub-convoys as needed to serve the different port rail terminals and also other terminals outside the port.

The following figure shows the location of Valencia Fuente San Luis (Valencia FSL) in the last mile close to the port of Valencia.



Figure 13. Valencia Fuente San Luis (Shunting Terminal). **Source:** Google earth

The procedure associated to the train reception at port terminals that required shunting operations in Valencia FSL is detailed here below. In particular, the case of a train from Madrid to Valencia port terminals is presented.

1. The rail operator sends the final loading list to the origin terminal.
2. The origin terminal sends the loading list as well as on which platform the container is loaded to the railway undertaking.
3. The railway undertaking checks and sends the unloading list to the port terminal (one or more).

For trains running from the origin terminal to the port of Valencia directly (without shunting operations in Valencia FSL), the port terminal will receive the same original information compiled in the loading list.

For trains that require shunting operations in Valencia FSL, data does not match since the terminals receive the original information of all the containers on the train without registering the changes made in Valencia FSL. Internal movements between terminals are also common, and this means changing the order of the convoy and also the containers loaded on it.

SICSA RAIL TRANSPORT, S.A.												Nº TEUS	77.00
Nº de Expedición: 0761408212100												20'	15
ORIGEN: T.COSLADA												40'	31
MERCANCIA: CONTENEDORES												UTTs'	46
												Toneladas'	739.87
PARTE DE CARGA DE TREN													
Nº UIC Vagón	Pbs.Vagón	Pbs.Contenedor	Contenedor	V/C	Tipo	P.Bruto	C.ISO	Linea	Buque	Destino	T. Carga	T. Descarga	Observaciones
			CAIU8428548	C	40	14.30	4510	HJS	NAJRAN	NHAVA SHEVA	T.COSLADA	T.VALENCIA PT.	Export
			FSCU3001186	C	20	21.30	2210	MSC	VEGA MERCURY	ALGER	T.COSLADA	(T) T.VALENCIA PT.	Export
			MEDUZ710370	C	20	7.30	2210	MSC	BUXCLIFF	VERACRUZ	T.COSLADA	(T) T.VALENCIA PT.	Export
			MEDU6684623	C	20	21.30	2210	MSC	VEGA MERCURY	ALGER	T.COSLADA	(T) T.VALENCIA PT.	Export
			MSCU3396632	C	20	12.30	2210	MSC	SHASTA	BEJAJA	T.COSLADA	(T) T.VALENCIA PT.	Export
			CRXU9361358	C	40	7.30	4510	MSC	MINERVA	MACAS/CASABLANCA	T.COSLADA	(T) T.VALENCIA PT.	Export
			MEDU8075457	C	40	23.30	4510	MSC	MSC LISA	CRISTOBAL	T.COSLADA	(T) T.VALENCIA PT.	Export
			MSCU4900389	C	40	12.97	4210	MSC	BUXCLIFF	VERACRUZ	T.COSLADA	(T) T.VALENCIA PT.	Export
			MSCU8561555	C	40	14.30	4510	MSC	BUXCLIFF	HOUSTON	T.COSLADA	(T) T.VALENCIA PT.	Export
			DFSU1384429	C	20	26.30	2210	UAS	JAZAN	PORT KELANG/BRISBANE	T.COSLADA	T.VALENCIA PT.	Export
			GLDU3882080	C	20	26.30	2210	UAS	JAZAN	PORT KELANG/BRISBANE	T.COSLADA	T.VALENCIA PT.	Export
			TEMU5286700	C	20	26.30	2210	UAS	JAZAN	PORT KELANG/BRISBANE	T.COSLADA	T.VALENCIA PT.	Export

Figure 14. Loading list. Source: Continental Rail

4. With the data received on the loading list, the railway undertaking elaborates the 1007 document or data train composition. This information is uploaded to the ADIF (Administrator of railway infrastructure) application.

The 1007 document is the document required by ADIF to depart the train. This document compiles the main characteristics of the convoy (length of the convoy, containers loaded on it, number of TEUs, weight of the containers, origin/destination of the container, amongst other).

COMUNICACIÓN ESCRITA DE DATOS DE COMPOSICIÓN DE TREN																	
Identificador	0252-20140821			Fecha:	21-08-2014		Empresa Ferroviaria	CONTINENTAL			Destinatarios			Pág.: 1/2			
DATOS DEL TREN EN LA ESTACIÓN: 98222 PUERTO SECO																	
NÚMERO.....	97047 / 97046			TIPO	100N			ASIMILADO									
FECHA.....	21-08-2014			Masa Locomot.	0121			Masa Frenada Locomot.	127								
NUM. SERIE U.I.C. LOCOMOTORAS	957103350238			Masa Locomot.				Masa Frenada Locomot.									
NUM. SERIE U.I.C. LOCOMOTORAS				Masa Locomot.				Masa Frenada Locomot.									
LONGITUD (Incluida la/s locomotoras)	588																
DATOS DE LA COMPOSICIÓN (Incluidas las locomotoras remolcadas)																	
Orden	Serie	Nº Serie U.I.C.	Origen	Destino	Mercancía	Ejes	Masa Remolcada			Masa Frenada		Rég.	M.P.	C47	(1)	(2)	T.E.
							Tara	Carga	Total	F.Autom.	F.Est.						
01	PMMC	387145520095	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	020.3	021.3	041.6	041	21	G	N	1			
02	PMMC	387145520038	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	020.3	021.3	041.6	041	21	G	N	1			
03	PMMC	387145520020	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	020.3	030.3	050.6	050	21	G	N	1			
04	PMMC	387145520079	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	020.3	028.8	049.1	049	21	G	N	2			
05	PMMC	347145520206	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	020.3	030.3	050.6	050	21	G	N	1			
06	PMC	287144330340	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	002	012.8	004.0	016.8	016	20	G	N	1			
07	PMC	437143781932	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	026.6	057.6	084.2	072	21	G	N	1			
08	PMC	287144330241	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	002	012.8	028.8	041.6	036	20	G	N	2			
09	PMC	287144330365	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	002	012.8	004.0	016.8	016	20	G	N	1			
10	PMC	437143781031	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	026.6	048.6	075.2	072	31	G	N	1			
11	PMC	287144330381	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	002	012.8	028.3	041.1	036	20	G	N	2			
12	PMMC	387145520012	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	004	020.3	052.3	072.6	072	21	G	N	1			
13	PMC	287144330522	VICV-CF-PTO SEC	VALENCIA-PTO SU	CONTENEDORES	002	012.8	027.0	039.8	036	20	G	N	2			

Figure 15. Train composition (1007 document). **Source:** Continental Rail

- The railway undertaking sends an e-mail to Valencia FSL requesting shunting operations on the train composition (if the convoy is not direct).
- Once the shunting operations are completed in Valencia FSL, the sub-convoy depart the port terminals, however the information is not updated. As a result, the port rail container terminals receives incorrect information about the location of containers on the train or simply receives the original information of all the containers on the train that varies significantly from the actual containers that will enter their terminal.

The main characteristics of the sub-convoy (length of the convoy, containers loaded on it, number of TEUs, weight of the containers, destination of the container, amongst other) are critical data for the port rail terminals to plan their work. At present, the information of the sub-convoy is almost inexistent for the port rail terminals and it is mainly manual. It is especially important for their planning to know in advance the length of the convoy to be received to plan the spaces available in the terminal. The lack of reliable information for the loading and unloading of trains and about the space necessary for its operations has a deep impact in the efficiency of the terminal (needs more time to operate each train) and on the complete railway supply chain, therefore affecting all actors (shipping companies, railway operators, railway undertakers, terminals and ports mainly).

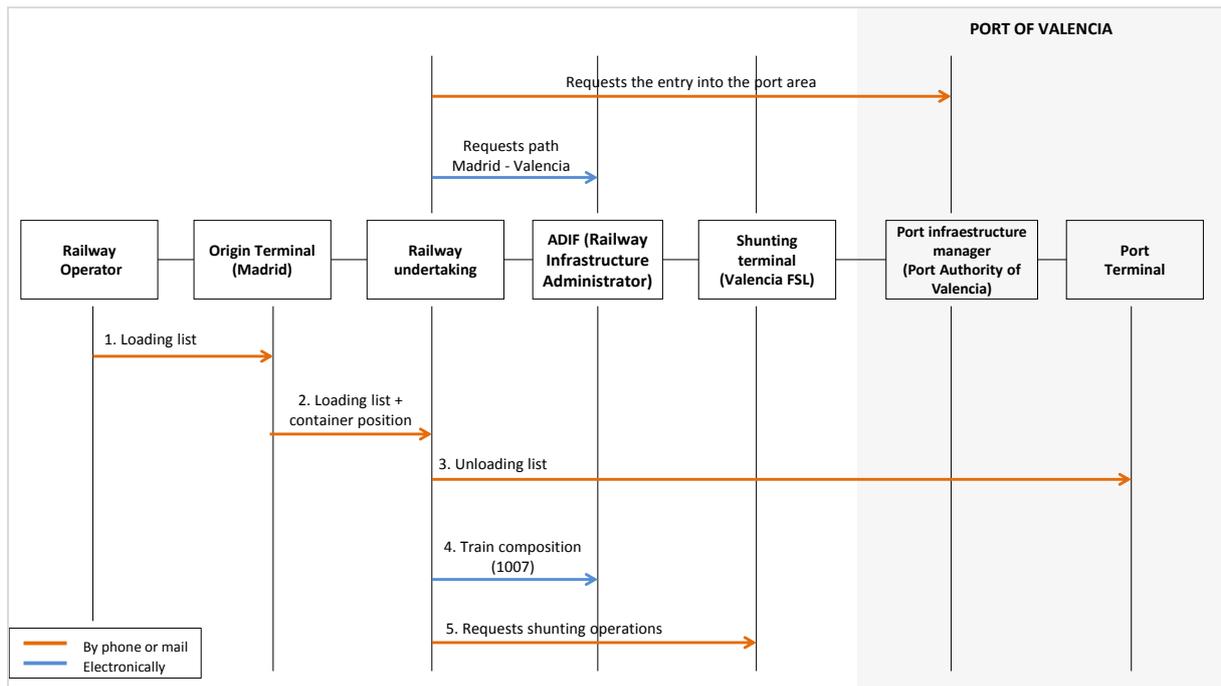


Figure 16. Shunting operations at Valenciaport. **Source:** Own elaboration

4.1.2. Port of Livorno

Towards an integrated logistic platform, ideally located along the routes of European and national transport, Livorno has experienced difficulties in the creation of multimodal services to the hinterland due to poor rail links. In particular, the lack of short rail links within the area of Livorno has prevented the creation of a complete logistics node, able to compete with other ports to attract traffic volumes.

The following strategic steps are to be implemented for achieving the full enhancement of the Livorno Logistic Node:

1. The solution of existing physical bottlenecks impeding smooth railway connections, as result of missing links and operational constraints related to handling within inland terminals;
2. The implementation of railway services (shunting) between Livorno Port and the Guasticce Freight Village, performed by a railway operator, to be chosen through a tender in accordance with EU competition law in force, thus improving efficiency by better managerial and operational capabilities;
3. The full integration of port and Guasticce Freight Village as logistic platform, providing a wide range of logistics services and supplying a large surface for logistics facilities.

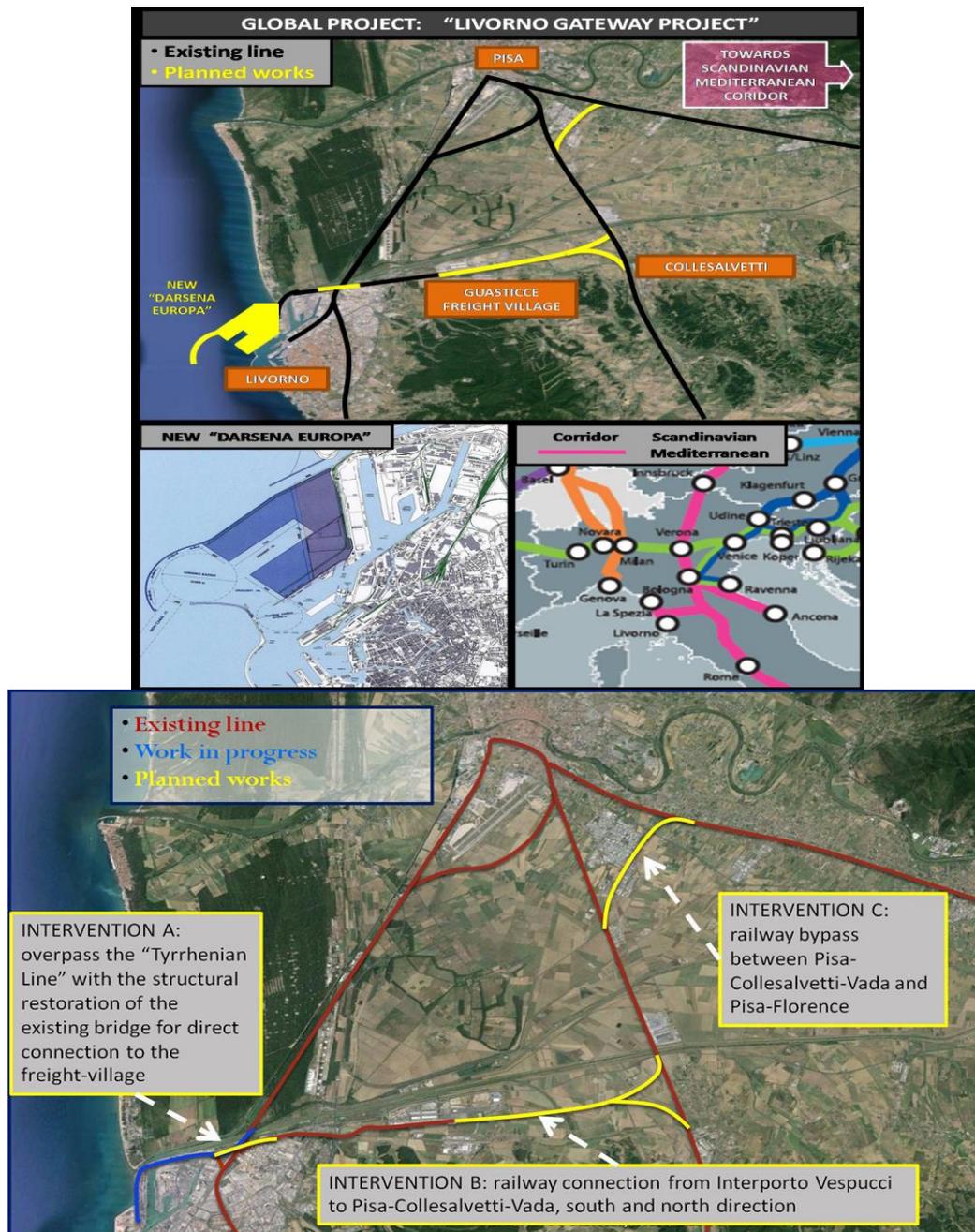


Figure 17. Livorno Gateway Project. **Source:** Port of Livorno

Critical Situation of the Rail Infrastructure

The first step of a complete logistics integration is based on well-defined infrastructure projects, then on tracing the path of development of technological solutions and of the related application areas that promote the integration between technical and customs

issues. The first step was to initiate a preliminary analysis of the current platform, logistics and intermodal services operation.

The critical issues identified within the railway network of the port of Livorno can be summarised into three categories:

- **Infrastructure:** Livorno Calambrone railway station is characterised by beam rail unused or occupied indefinitely by defective wagons (it would be appropriate a reorganisation of the tracks, even fewer in number but greater in length not to penalise the operational capacity as reported in sub-activity 1.4.3); port-freight village connection with imposed passage through Calambrone railway station; need to block trains departing directly from the terminal; lack of internal beam rails to the port area for the collection of wagons and the formation of the shuttle; high number of connections that can be used only with manoeuvres to push; large number of disused track or unusable (20km); insufficient refuge siding and passing loop for the handling of wagons
- **Operations:** low amount of shunting (a train or part of a train from the main line to a siding or from one track to another) compared to the needs of terminal; low performance locomotives that will slow shunting; frequent rejection of wagons resulting in slower forwarding trains; railway swing bridge over the Navicelli Channel with opening hours that restrict the execution of the shunting
- **Management:** contract for the execution of rail traction service in the port of Livorno had expired and need to be reassigned; reorganisation of rail services within the port to improve efficiency and quality.

Missing Links and Related Actions

To pursue the aim of the construction of the logistics platform, it was decided to proceed with the design of the physical connection Port of Livorno- Vespucci Freight Village.

The project began on the basis of a transport feasibility study for the trains in terms of connection, by railway overpass, between the port of Livorno and Vespucci Freight Village. The above mentioned work will result in the structural and functional restoration of a railway bridge built in 1932 that belongs to a local disused line. For the access ramps, port side, it's been planned to use the existing track with reconstruction of the embankment and armament for a distance of about 500m; freight-village side, the construction of an embankment to an extent of approximately 550m, supported on one side by a straight wall in reinforced concrete founded on piles will be necessary for the maintenance of the connection Calambrone-Freight Village.

The calculations on the slope and the minimum radius of curvature led to a notional value of the slope of 19%; this result influences the transport and the choice of the means of locomotion but, absolutely, does not affect the effectiveness of connection.

Means of Locomotion

Market research was conducted on locomotives currently in circulation and are available means able to tow (in diesel mode) also 1,100 tons.

The research is also envisaged to another type of means: the locotracors. The locotracors are technically advanced means able to reduce the time of handling station, reducing shunting costs thanks to their versatility and low power consumption: entering and leaving the rails at any point of the train, in extremely small spaces, with a quick and easy movement. They travel on both road and rail (through the tracks) moving effectively within any plant. The efficiency of this means as shunting vehicles is stressed by the use of a large number of railway companies. Using their main characteristic of not being tied to the rail, they can be particularly effective in the presence of log rails and street level service areas. The Locotractor is a bimodal rail-road towing mean, with two road axles and two bogies (one or two axles); switching from road to rail mode, and vice versa, is realised with hydraulic connections. The railway carriages have the only function of driving on rails, while the traction is made by the two road axles. The tires of the road wheels are constructed so as to allow the maximum adhesion with the rail. Thanks to the high coefficient of friction between the tire and the steel rail (approx. 0.9 with dry rail) it is possible to achieve a high tensile stress in relation to the mass and size of the vehicle.

Regardless of the choice of the means of locomotion for pulling wagons, some preliminary estimates have been made on the conduct of shunting; below, the question is developed from the technical point of view, while the next chapter shows the economic analysis and the customs procedures that characterise this type of activity.

The average speed is 5km/h; the figure is indicative especially as regards the locotractor, in fact this is the reference speed for this vehicle with this load (this value is the target range inside rail terminals). Likely, the locomotive moves at a double speed (10km/h) and therefore the cost for the fuel is substantially similar to the locotractor, essentially doubling the hourly consumption.

In the specific case, the latter figure is useful for assessing the saturation of the tractors. The maximum level of operations that can be achieved is 4 pairs of trains/day at entry/exit to/from the freight/village where the locomotive will be busy for 12 hours/day (1 shuttle requires 1 hour in the shunting port-freight village to which must be added 30min in the case of arrival in Terminal Darsena Toscana). The number of people required for the movement is quantified in three units (1 driver and 2 handlers) plus an extra-unit in substitution. Assuming the work in two turns, the team is made up of 8-9 people considering a team leader. All values are obtained considering a technical

amortisation of 20,000 working hours and a residual value of the equipment at 20% of the purchase price.

Shunting as is: Information Flows and Procedures

Shunting is allowing for the correct positioning of wagons and coaches and heading them to their final destination. Shunting is nonetheless a major issue for the efficiency of overall railway transport, especially in those countries like Italy where the layout of many terminals represents a relevant hindrance for the development of efficient and reliable rail services with the hinterland. This is even more so true for operations performed within ports, which account for a third of global train costs (source UNICREDIT 2013, Infrastrutture e trasporti, 2013).

In particular, the main point to be addressed is the creation of block trains inside port boundaries, in order to arrange wagons into the foreseen line near berths, where cargo is loaded or unloaded. In this respect, the shunting operations will be speeded up also with reference to the administrative burden, besides the technical aspects discussed beforehand. Currently, the shuttle carrying goods from the marshalling yard to the terminal (export) travels with a transport document, the form Ch. 30, which reports the following information:

- Train number.
- Wagons line.
- Goods loaded (type and weight as well).

The goods are shipped along the railway line with the waybill issued by the railway undertaking; insofar the full interoperability among the Ch. 30 document. The waybill and the Export Document have not yet been achieved, and the exchange of information is still based on customised files which vary greatly from one operator to another. Sometimes there is still hardcopy of the information. The form Ch.30 is delivered to the Customs office along with the international rail waybill (source, Trenitalia, Instruction 13 on Customs Operations and Forms).

In relation to import procedures, goods that are shipped are reported in the ship's manifest, which is forwarded to the terminal operator before the ship arrives in the port. Cargo to be transported by rail must then be authorised by the competent railway transit office. As for the export procedure, both international rail waybill as well as the Ch. 30 form are prepared, the former by the sender and latter by the railway undertaking. The Ch. 30 is finally forwarded to the Customs office, in order to allow the European transit or the introduction of goods in the national customs area.

Turning to customs and operational checks, the lack of interoperable information exchange systems implies lengthy procedures during which the personnel charged with customs controls has to verify by hand if the goods carried by train match with the

provided list. This procedure might be easier if all goods were traced with RFID through gates and if the conformity check could be done seamless through cameras. It is straightforward, on the other hand, that the physical inspections should be carried out in separated rail track, in order to forward the authorised goods to the quay. This issue leads to the infrastructural constraint represented in port terminals by too short marshalling tracks, and consequently by complex shunting procedures, which eventually imply additional costs for the administrative and customs checks to be performed in port-inland interface. In fact, trains made up of 20 - 25 wagons should then be split into different tracks, in order to carry out the inspection, and additional shunting is therefore needed.

The following paragraph analyses more in depth the costs of shunting operations, with particular attention paid to rail shuttle between an inland logistic node (in the case of Livorno, the Guasticce freight village) and the port.

Shunting Costs: An Analysis at Local Level

With reference to costs, it is important to state that, generally speaking, shunting operations are not profit generating activities. Even if the shunting operator performs solely this business, the competitive pressure of the intermodal transport chain makes it difficult to recover the high costs related. In fact, on one hand the shunting operation proves not to be a specialised or even value-added service and, on the other hand, it has the high fixed capital costs common to the railway services in terms of rolling stock, equipment and personnel. Hence, the economic viability of shunting operations, at least the full costs recovery, plays a major role in the establishment of secure and efficient rail corridor from the port to the inland. The customs and administrative checks (that is the checks of clearance through the customs of shipped goods as well as the safety controls foreseen by the law for railway transport) are in fact to be performed in the broader framework of last mile rail operations.

The Livorno Port Authority has therefore made an estimate of shunting costs of a rail shuttle between the port and the near Guasticce freight village. The following cost's items have been taken into account:

- Rolling stock, notably locomotives and wagons;
- Personnel (that is the crew), in order to ensure one or two shifts per day;
- Maintenance and fuel;
- Insurance and concession fees;
- General costs.

We assumed that each shuttle will be made up of 20 wagons, and the crew will consist of three persons, one being the driver and the other two being the operators.

Obviously, there is interrelation between the traffic volumes and costs trend, but the incidence of fixed costs is by far more relevant, since the variable costs account for only 15% of fixed cost sum. As a consequence, if we assume only one shift of eight hours per day, operating four shuttles per day, the shunting cost per wagon between the port and the freight village will be up to 30 euros, whereas with two shifts and 8 shuttles per day shunting cost will be around 20 euros per wagon. In conclusion, the more shuttles there are the lower the fixed costs are. As expected, the economic viability of shunting operations largely depends on traffic volumes. In relation to customs, the shunting operator has to be awarded a concession contract within port boundaries as well as a (bank) guarantee for providing customs procedures. The cost of the former has been evaluated in worth of €30,000 per year, while the latter has been estimated around 1,000 euros per year.

The economic analysis has to consider the infrastructural constraints, described in the previous section, and their impact on overall competitiveness of shunting operations between the port and the freight village. In particular, the foreseen completion of direct railway link between these two infrastructures will help on one hand the establishment of smoother rail interconnections; on the other hand it will imply additional costs, related to the steady slope of the overpass on the Genova- Roma railway line, which constitutes the main feature of such direct link. The use of more powerful locomotives should be envisaged, as well as additional maintenance costs due to the track feature.

Moreover, the implementation of the direct link is instrumental to relocate marshalling operations within the freight village. In this respect, further improvement of this analysis will focus on terminal operations costs and procedures to ease administrative burden for the train shuttle between the port and the freight village.

5. Roadmap for the Establishment of an Electronic Environment for Commercial, Shunting and Transit Operations in Sea-Rail Combined Transport

Taking into account the results obtained in the previous tasks, the following recommendations are proposed for the creation of an interoperable electronic environment for commercial, shunting and transit operations in sea-rail combined transport.

5.1. Actions to be Implemented for the Interoperability of Electronic Rail Consignment Solutions for MoS

The electronic rail consignment note would significantly contribute to the facilitation of rail transport use as part of MoS supply chains and to ease the exchange of such document among MoS stakeholders. Several recommendations are proposed:

Recommendation 1

Regulation and public support should foster in some EU countries the modification of current practices whereby many rail transport customers do not send all necessary information to fill in the rail consignment note for each specific shipment. In these countries (ie. Southern EU Member States), it is necessary to raise awareness amongst shippers of the importance of having a proper transport contract for their shipments and of the advantages of exchanging this document in electronic format. Clear European-wide regulation covering these issues would help the sector moving in this direction.

Action Proposed: Discussion of a regulation proposal in sectorial meetings representing both large and small and medium-sized railway undertakings. This draft of regulation would then be proposed and discussed with the European Railway Agency (ERA).

Action to be carried out by: Railway undertakings

Time Plan: 2015-2016

Recommendation 2

Railway undertakings need to be developed in their Rail Transport Management System (RTMS), a programme that is able to send an individual rail consignment note per shipment. This is particularly relevant for MoS as most of the short-sea traffic to be transported to the hinterland by rail is unitised. Having a rail consignment note for each container or group of containers, swap body or truck platform instead of having a general rail consignment note for the whole train as is the case today in many EU countries is a good practice that should be encouraged. Small and medium-sized railway undertakings are usually the type of companies facing the most difficulties to develop an advanced RTMS and to impose changes of current practices to their customers, so providing public support for these kind of developments would be decisive.

Action Proposed: Promotion of the opportunities that the Connecting Europe Facility of the EU provides for small and medium-sized railway undertakings to develop their RTMS including advanced options for the creation of shipment-related electronic rail consignment notes.

Action to be carried out by: INEA, European Commission, ERA, Ministries of Transport, innovation centres.

Time Plan: 2014-2020

Recommendation 3

Small and medium-sized railway undertakings and local infrastructure managers (such as port authorities in charge of managing railway infrastructure in their respective ports) should be included in the working groups discussing the TAF-TSI. They have not been consulted so far and as a result, the risk that common interfaces to be defined by TAF CCG and TAF-TSI regulations concerning the electronic rail consignment note will not take into consideration the reality of small and medium-sized railway undertakings and local infrastructure managers is high. Additionally, TAF-TSI integrating only large railway undertakings (many of them public monopolistic companies in the past) may end up creating entry barriers to the EU rail transport market for new private railway undertakings.

Action Proposed: Evaluation of possible methods for small and medium-sized railway undertakings and infrastructure managers to be represented at TAF CCG or for them to be consulted prior to the adoption of sectorial regulation.

Action to be carried out by: TAF CCG.

Time Plan: 2015-2020

Recommendation 4

Off-the-shelf programmes including electronic invoicing tools and electronic rail consignment notes tools among other essential tools for any railway undertaking should be developed and made available in the market. Although most likely each company would need to carry out some adaptations of these tools to their specific business, the availability of good value-for-money software in the market would foster the progress of many small and medium-sized railway undertakings lacking these tools and therefore performing most operations manually still nowadays. The availability of these off-the-shelf programmes could encourage a significant technological leap forward in this sector.

Action Proposed: Promotion of the opportunities to develop projects of common interest including pilots that the Connecting European Facility of the EU provides for IT companies specialised in the rail transport sector. Also, developing for railway undertakings to prototype IT tools that could become off-the-shelf programmes for small and medium-sized railway undertakings in the future.

Action to be carried out by: IT companies specialised in the rail transport sector and railway undertakings.

Time Plan: 2015-2020

Recommendation 5

There is a lack of platforms for the exchange of documents and communication between railway undertakings, infrastructure managers, multimodal transport operators, railway terminal managers, shippers, port terminals and other stakeholders. In the specific case of MoS supply chains including rail transport, all parties could benefit from the use of existing communication platforms such as port community systems (PCSs).

Action Proposed: Encouraging the inclusion of railway undertakings, railway undertakings' customers, inland railway infrastructure managers, railway classification yard managers, port railway terminal managers, national infrastructure managers and port authorities in port community systems and supporting the development of railway specific tools in PCSs.

Action to be carried out by: PCS managers.

Time Plan: 2015-2020

Recommendation 6

Developing specific electronic messages concerning the rail consignment note for small and medium-sized rail undertakings as well as different types of traffic. At the moment, TAF-TSI regulations have developed general rail consignment note messages applying to all kinds of traffic. Making available specific electronic messages adapted for containerised rail transport would facilitate its use by railway undertakings operating in this market, which is particularly relevant for MoS. Additionally, some fields of information requested in the rail consignment note are already available in other transport documents required for container shipments so the connection of railway undertakings' systems to infrastructure managers' systems and to the PCSs of the port where the cargo is destined for or arriving at would bring considerable time and cost savings and errors would be notably reduced.

Action Proposed: Proposal of adaptation of rail consignment note message to the specific case of containerised rail transport to be presented at TAF CCG for discussion.

Action to be carried out by: Railway undertakings.

Time Plan: 2015-2016

A proposal of rail consignment note adapted to containerised shipments for a specific case of a small-medium sized railway undertaking operating traffics between the port of Valencia and its hinterland has been elaborated as part of the work carried out in B2MoS Activity 1 and is further described below.

The next Table shows the mapping between the CIM consignment note and the Electronic Consignment Note (ECN) for containerised rail transport. For the ECN, the

Table presents the data required, actors providing the information as well as the documents including the information.

Table 5. Mapping CIM Consignment note and Electronic Consignment Note. Source: Own elaboration

CIM Consignment Note Manual (GLV-CIM) - Recommendation						Electronic Consignment Note Recommendation -AEIF			Small-medium sized railway undertaking		Port Community System data	
Box	Data status	Data	Read	Write	Amend	Data	Mandatory /Optional	Group of data	Data	Document	Data	Notes
1	M	Consignor: Name, postal address (including country code in accordance with ISO 3166), signature and where possible, telephone or fax number (with international prefix) or e-mail address of the consignor. The signature is to be replaced by the consignment number shown in box 62 (see Article 6 § 3 CIM) unless specially agreed otherwise between the consignor and carrier. For goods moving between the Member States of the European Union, the consignor should also provide his VAT registration number if he has one.	Contractual carrier Successive carrier Consignee	Consignor		Consignor	M	Consignor and consignee information	Container-platform related document: Headline	Container-platform related document	Shipper (Remitente / Cargador)	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS
2	O	Customer code for the consignor If the customer code is missing, it may be entered by the carrier.	Consignee	Consignor	Contractual carrier Successive carrier	Consignor ID	M	Consignor and consignee information	?		Ref. Emisor IT	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS
4	M	Consignee: Name, postal address (including country code in accordance with ISO 3166) and if possible the telephone or fax number or e-mail address of the consignee. For goods moving between the Member States of the European Union, the consignor should also provide the VAT registration number of the consignee if he has one and if the consignor knows it.	Consignee	Consignor	Contractual carrier Successive carrier	Consignee	M	Consignor and consignee information	<i>In most of the cases it coincides with the Shipper which is a multimodal operator providing complete transport solutions to their clients</i>		Goods loading/unloading (Lugares de carga/descarga) or Shipper (Remitente / Cargador)	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS
5	O	Customer code for the consignee. If the customer code is missing, it may be entered by the carrier.	Consignee	Consignor	Contractual carrier Successive carrier	Consignee ID	M	Consignor and consignee information	?		? (Ref. Emisor it ; if it coincides with the shipper)	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS
7	C	Consignor's declarations committing the carrier.	Consignee	Consignor	Contractual carrier Successive carrier	-	-	-	Transport operator comments		?	?
8	O	Consignor's reference	Consignee	Consignor	Contractual carrier Successive carrier	Consignment Reference	O	Consignor and consignee information	?		Nº PCS IT	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS
10	M	Delivery point	Consignee	Consignor	Contractual carrier Successive carrier	Place of Ultimate Destination	O	Place and Time Information	Unloading Terminal (Terminal de descarga)	Container-platform related document 1007 (train circulation doc)	Unloading Terminal (Terminal de descarga)	Available in the new PCS functionality for rail operations

Box	Data status	Data	Read	Write	Amend	Data	Mandatory /Optional	Group of data	Data	Document	Data	Notes
11	O	Code for the delivery point.	Consignee	Consignor	Contractual carrier Successive carrier	Place of Ultimate Destination	O	Place and Time Information	Unloading Terminal (Terminal de descarga)	Container-platform related document 1007 (train circulation doc)	Unloading Terminal (Terminal de descarga)	Available in the new PCS functionality for rail operations
12	M	Code for the station servicing the delivery point.	Consignee	Consignor	Contractual carrier Successive carrier	Place of Ultimate Destination	O	Place and Time Information	Unloading Terminal (Terminal de descarga) or Destination Station (Estación de destino)	Container-platform related document 1007 (train circulation doc)	Unloading Terminal (Terminal de descarga) or Destination Station (Estación de destino)	Available in the new PCS functionality for rail operations
13	C	Commercial specification 1 Route; 2 Traffic flow; 3 Carriers mandate to perform the carriage, section, status; 4 Defined frontier stations; 5 Other conditions requested (EDI contract nº, etc.);	Consignee	Consignor	Contractual carrier Successive carrier	Routing information	M	Contractual Information	Origin, intermediate and destination stations	Container-platform related document	Origin, intermediate and destination stations	Available in the new PCS functionality for rail operations
16	M	Acceptance: Point, date and time at which the goods were accepted.	Contractual carrier Successive carrier Consignee	Consignor		Date of original departure; station of original departure; place of departure; country of departure	M, O, M, M	Place and time information	Origin; Loading terminal; Estimated Departure Time (Origen; Terminal de Carga; Hora prevista de salida)	Container-platform related document	Origin; Loading terminal; Estimated Departure Time (Origen; Terminal de Carga; Hora prevista de salida)	Available in the new PCS functionality for rail operations
17	O	Code for the acceptance point: The carrier is to provide the consignor with the code in the customer agreement. If the code is missing, it may be entered by the carrier.	Consignee	Consignor		Station of original departure	O	Place and time information	Loading terminal (Terminal de carga)	Container-platform related document	Loading terminal (Terminal de carga)	Available in the new PCS functionality for rail operations
18	C	Wagon No	Consignee	Consignor	Contractual carrier Successive carrier	Wagon number	M	Wagon Information	Wagon UIC Number	Container-platform related document 1007 (train circulation doc)	Wagon UIC number (Nº del vagón)	Available in the new PCS functionality for rail operations

Box	Data status	Data	Read	Write	Amend	Data	Mandatory /Optional	Group of data	Data	Document	Data	Notes
21		<u>CIM consignment note for combined transport:</u>				Transportation unit number; Transportation unit size and type; Transport unit dimensions; Unit capacity used	M; M; M; M	Wagon Information	Container number; Container type and dimensions; Full/Empty	Container-platform related document 1007 (train circulation doc)	Container number; Container type and dimensions; Full/Empty	Available in the new PCS functionality for rail operations
		No of UTI/ Type of UTI/ Length of UTI/Net mass [weight] of UTI/ Tare of UTI										
		Description of the goods:										
	M	- No of the UTI,			Contractual carrier							
	M	- type code for the UTI,			Successive carrier							
	M	- length of the UTI,										
	M	- net mass [weight] of the contents of the UTI,										
	M	- tare of the UTI,										
	C	Movement Reference Number (MRN) required by customs law for wagons and UTI,										
24	M	NHM code 6-digit NHM code for the goods (www.uic.org). For combined traffic, the NHM code for the UTI may be used	Consignee	Consignor	Contractual carrier Successive carrier	Load type	M	Consignment Identification	Container number	Container-platform related document 1007 (train circulation doc)	Load type (taric code) or container number	Available if the Transport Order is sent through the PCS or through the SAD
25	M	<u>CIM consignment note:</u>	Consignee	Consignor	Contractual carrier Successive carrier	Gross weight	M	Consignment Identification	Gross weight of load; Gross weight of load + ITU tare (Peso carga; Peso bruto)	Container-platform related document 1007 (train circulation doc)	Gross weight of load; Gross weight of load + ITU tare (Gross weight; tara)	Available in the new PCS functionality for rail operations
		<u>Mass [weight]:</u> Indicate the gross mass of the goods (including packaging) or the quantity of the goods expressed by other means, separately by NHM code; the total mass of the consignment.										
		<u>CIM consignment note for combined transport:</u>										
		<u>Mass [weight]:</u> Indicate (the gross mass of UTI 1, the gross mass of UTI 2, ..., the total mass of consignment)										
29	M	Place and date completed: Place and date (year, month, day) at which the consignment note was made out.	Consignee	Consignor	Contractual carrier Successive carrier	-	-	-	Place and date	Container-platform related document	Place and date	Available in the new PCS functionality for rail operations (Needs to be linked to a new functionality for CN generation)
30	M	Description of the document	Consignee	Consignor	Contractual carrier Successive carrier	-	-	-	CIM Consignment note		CIM Consignment note	Available in the new PCS functionality for rail operations (Needs to be linked to a new functionality for CN generation)

Box	Data status	Data	Read	Write	Amend	Data	Mandatory /Optional	Group of data	Data	Document	Data	Notes
50	M	Route: Details of the actual route using codes in accordance with UIC leaflet 920-5. These codes may be supplemented by the route in plain text. Where there have been circumstances preventing carriage, indicate the new route as necessary with the endorsement "Diverted because of...".	Consignor Consignee		Contractual carrier Successive carrier	Previous RU; Next RU; Next interchange station requested; Date-Time of interchange to next RU	M; M; M; M	Routing Information	Origin Station; Destination Station; Estimated time of departure; Estimated time of arrival	Container-platform related document	Origin Station; Destination Station; Estimated time of departure; Estimated time of arrival	Available in the new PCS functionality for rail operations
56	C	Carrier's declarations: As applicable, declarations by the carrier such as load limit, reservation with reasons, point, date and time at which the goods were accepted if they differ from the information given by the consignor in box 16, etc.	Consignor Consignee		Consignor Consignee	-	-	-	Carrier observations (Observaciones del transportista)	Container-platform related document 1007 (train circulation doc)	Carrier observations (Observaciones del transportista)	Available in the new PCS functionality for rail operations
58	M	a) Contractual carrier: Undertaking code in accordance with the list of carrier codes (www.cit-rail.org) and optionally name and postal address in plain text of the contractual carrier plus signature. The signature is to be replaced by the consignment number shown in box 62 (see Article 6 § 3 CIM) unless specially agreed otherwise between the consignor and carrier. b) Simplified transit procedure for rail: By marking a cross in the box, the contractual carrier requests that the simplified transit procedure for rail defined in Articles 414 to 425, 441 and 442 of the implementing provisions for the Community Customs Code (Regulation (EEC)/2454/93), or the corresponding provisions of the EU/EFTA Convention on a Common Transit Procedure, be applied. He thus certifies that all the carriers taking part in the carriage including, if applicable, substitute carriers, are authorised to apply the simplified transit procedure for rail. The contractual carrier thus becomes the principle to the rail simplified transit movement.	Successive carrier Consignor Consignee		Contractual carrier	-	-	-	Railway operator / Railway Company	Container-platform related document 1007 (train circulation doc)	Railway operator / Railway company (Operador de transporte / Transportista)	Estimated time of arrival Time of arrival
59	M	Date of arrival: Date of arrival of the consignment at the destination station (year, month, day). The carrier may add an arrival number. Below this box, the number and description of the sheet of the consignment note. This information is to be pre-printed on the paper consignment note and stored in the electronic consignment note record.	Consignor Consignee		Contractual carrier Successive carrier (Data provided by the	-	-	-	Estimated time of arrival Time of arrival	Container-platform related document	Estimated time of arrival Time of arrival	Estimated time of arrival Time of arrival
62	M	Consignment number: Identification number of the consignment [country code in accordance with the appendix to UIC leaflet 920-14 and station code in accordance with DIUM, code for the forwarding carrier or substitute carrier in accordance with the list of carrier codes (www.cit-rail.org) and consignment number]. On paper consignment notes, a control label is to be applied to sheets 2 (invoice) and 5 (duplicate invoice). When identification numbers for consignments are allocated by computer, control labels need not be used.	Consignor Consignee Successive carrier	Contractual carrier		Waybill number; waybill type	M; M	Consignment Identification	Consignment note number		Consignment note number	Available in the new PCS functionality for rail operations (Needs to be linked to a new functionality for CN generation)

Charging sections

Box	Data status	Data	Read	Write	Amend	Data	Mandatory /Optional	Group of data		Data	Document	Data	Notes
70	M	Codes for the charging sections: International codes for the country in accordance with the appendix to UIC leaflet 920-14 and station or point in accordance with DIUM at the beginning and end of the charging section or location where just charges accrue.	Consignor Consignee		Contractual carrier Successive carrier					Tariff (Precio)	Document	?	?
72	M	NHM Code: NHM code (www.uic.org) determining the charges applicable (need not necessarily correspond to that entered in box 24).	Consignor Consignee		Contractual carrier Successive carrier					Tariff (Precio)		?	?
75	M	Customer agreement or tariff applied	Consignor Consignee		Contractual carrier Successive carrier					Tariff (Precio)		?	?

Table 6. Electronic Consignment Note: actors and documents including the required information.

Electronic Consignment Note Recommendation		Origin of information (Actor)			Document including the information					
Data	Description	Railway operator	Railway undertaking	Port Community System	Notes	Loading/Unloading list	1007 (Train circulation doc)	PCS IT (Transport Order)	PCS Loading confirmation	PCS Others
Consignor and Consignee Information										
Consignor	Party which, by contract with a Service Integrator, consigns or sends goods with the carrier, or has them conveyed by him. (shipper, goods sender)	M	X	X	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS	X		X		
Consignor ID	Party identification of the consignor	M	X	X	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS			X		
Consignment reference	Identification of a document prepared by the shipper which evidences a contract for the transportation by a carrier of one consignment from named place of acceptance to a named place of delivery	O	X	X	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS			X		
Consignee	Party by whom the goods are to be received (goods receiver)	M	X	X	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS			X		
Consignee ID	Party identification of the consignee	M	X	X	Available if the Transport Order (Instrucciones de Transporte / Orden de Transporte) is sent through the PCS					
Contractual Information										
Contract Number customer - Lead RU	Contract of carriage between Consignor and Service Integrator.	M	X	X						
Freight payer	Party responsible for the payment of freight	M		X						
Code for customs treatment		O	X	X						X
Franco - terms		O	X	X						
Routing information (description)	Text for Origin, interchange points, destination	M		X		X	X		X	
Consignment identification										
Booking number	Identification of a document issued by a carrier to confirm that space has been reserved for a consignment in means of transport	O	X	X						
Waybill number	Reference number assigned to a waybill. Equal to Voyage number when used for maritime stage. Synonym: Consignment note number.	M	X	X	Available in the new PCS functionality for rail operations (Needs to be linked to a new functionality for CN generation)					X
Waybill type		M	X	X	Available in the new PCS functionality for rail operations (Needs to be linked to a new functionality for CN generation)					X
Goods description	General description of the nature of the goods. Examples: paper, pulp, board, plywood, timber, etc.	M	X	X	Available if the Transport Order is sent through the PCS or through the SAD			X		X
Load Type	Code list for products used by customs.	M	X	X	Available if the Transport Order is sent through the PCS or through the SAD			X		X
Gross weight of load	Booked/actual total weight (mass) of goods, including packing but excluding the carrier's equipment.	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Volume	Volume of the goods.	O	X	X						
Package type		M	X	X						
Number of packages	Total number of packages loaded	M	X	X						
Last goods description		M	X	X						
Dangerous goods description (Code)	RID remarks	M	X	X	Available in the new PCS functionality for rail operations.		X			X

Electronic Consignment Note Recommendation		Origin of information (Actor)			Document including the information					
Data	Description	Railway operator	Railway undertaking	Port Community System	Notes	Loading/Unloading list	1007 (Train circulation doc)	PCS IT (Transport Order)	PCS Loading confirmation	PCS Others
Wagon information										
Wagon number		M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Transportation unit number		M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Transportation unit, size and type	Characters (letters and/or numbers) which identify the transport unit. Examples: container, wagon, trailer, cassette, unit load device, etc.	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	X
Unit capacity used (e.g. loaded, empty)	Code to indicate to which extent the equipment is loaded or empty	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Transport unit dimensions (gauge)	Dimensions of a transport unit. Information is given if transport unit size and type does not provide required measurement.	M	X	X	Available in the new PCS functionality for rail operations.		X			X
Free text, additional instructions	Free text area for other information / instructions.	O								
Free text, delivery instructions	Instructions regarding the delivery of the cargo.	O								
Free text, handling instructions	Free text of any special handling required.	O								
Free text, transport instructions	General information regarding the transport of the cargo.	O								

Electronic Consignment Note Recommendation		Origin of information (Actor)			Document including the information					
Data	Description	Railway operator	Railway undertaking	Port Community System	Notes	Loading/Unloading list	1007 (Train circulation doc)	PCS IT (Transport Order)	PCS Loading confirmation	PCS Others
Place and Time Information										
Release date/time	Date/time when the goods are expected to be despatched or were despatched	M	X	X	Available in the new PCS functionality for rail operations.	X			X	
Date of Original Departure	Date (and time) of departure of means of transport.	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Place of Original Departure		O	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Station of original Departure (Station code type, Station code)		O	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Original Country of Departure		M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Place of Departure (Station code type, station code)	Place from which a means of transport is scheduled to depart or has departed.	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Country of Departure	Country from which the means of transport is scheduled to depart or has departed.	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Requested date of Delivery	Date/time when the customer requests goods to be delivered (handed over) to the delivery party at the place of delivery.	M	X	X	Available in the new PCS functionality for rail operations.	X			X	
Place of Destination (station code type, station code)	Place at which the means of transport is due to arrive or has arrived. Synonym: Place of arrival	M	X	X	Available in the new PCS functionality for rail operations.	X			X	
Country of Destination	Country at which the means of transport is due to arrive or has arrived. Synonym: Country of arrival	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Place of Ultimate Destination (station code type, station code)	Place whereto goods will ultimately be delivered	O	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Country of Ultimate Destination	Country whereto goods will ultimately be delivered	M	X	X	Available in the new PCS functionality for rail operations.	X	X		X	
Vessel name		O	X	X	Available in the new PCS functionality for rail operations.	X				X
Closing date and time	Closing time indicates the latest date/time when cargo is to be available for port operator for cargo loading preparations. Closing time is subject to the stowage mode.	O	X	X	Available in the new PCS functionality for rail operations.	X				X
Contract number LRU - RU		M		X						
Previous waybill number		O		X						
Previous waybill type		O		X						
Previous wagon number		O		X						

Electronic Consignment Note Recommendation		Origin of information (Actor)			Document including the information					
Data	Description	Railway operator	Railway undertaking	Port Community System	Notes	Loading/Unloading list	1007 (Train circulation doc)	PCS IT (Transport Order)	PCS Loading confirmation	PCS Others
Routing information										
Previous RU		M	X							
Next RU		M	X							
Next Interchange saturation requested		M	X							
Date/Time of Interchange to next RU		M	X							
Essential wagon information										
Current max. Permissible speed of wagon		M	X				X			
Wagon Gauge		M	X				X			
Wagon Weight Empty		M	X				X			
Number of axles		M	X				X			
Braking system		M	X				X			
Brake weight		M	X				X			
Wagon length over buffer		M	X				X			



5.2. Actions to be Implemented for the Interoperability of Simplified Rail Transit Procedures in Cross-Border Operations

The rail connections between ports and their hinterland must become more efficient both in terms of physical infrastructure/connections but also from IT interoperability capacity that supports operational and administrative activities. The transport/logistics operators and the responsible authorities must be supported by smart IT solutions that allow the electronic communication and accurate information provision and circulation between the involved bodies. The harmonisation of information and communication protocols and standardisation of the information interchanged will open new horizons in placing the ports as seamless gates in the MoS corridors. This simplified transit procedures allow a more convenient and cost effective connection between sea ports and dry ports.

Recommendation 1

Information that is not available for the declarant at the time of submission of the simplified transit documents should not be requested. It is worth considering that information is submitted by shipping agents that are located at the intermediate port, and being in this middle point position they will not have most of the commercial documents exchanged, which will have travelled from origin to destination.

Action Proposed: Establish at EU level a common model of Simplified Transit Document for goods travelling via maritime transport first and then continuing their travel inland by rail, limiting the data to be included within the document to the strictly necessary information.

This possibility could be limited to authorised economic operators (AEOs) only.

Action to be carried out by: The DG TAXUD.

Time Plan: 2015-2017

Recommendation 2

Customs arrangements between the different member states should be established to allow for physical inspections to be postponed in most cases to the point of destination.

Naturally excluded from this agreement are those goods that require inspecting at the point of entry into the EU (e.g. certain goods needing to be inspected in the BIP).

This possibility could be limited to AEOs.

Action Proposed: Develop the necessary legal instruments for Member States where transit documents are issued to accept the postponement of physical controls until the goods reach the destination.

Action to be carried out by: DG TAXUD and Member States Customs Authorities.



Time Plan: 2015-2016

Recommendation 3

In order to implement the recommendation above, it requires that the Customs at point of entry into the EU or the point of arrival for the ship informs the Customs office of destination on the outcome of the risk analysis, especially when it has determined that the item must be inspected. It is recommended that appropriate communication channels to exchange information on the results of the risk analysis processes are formalised.

Action Proposed: Develop the necessary lines of communication between customs of Member States in order to exchange information on the risk analysis carried out on a particular shipment.

It should be noted that with the implementation of the ICS (Import Control System), the necessary communications were established so that the Customs of the first EU port where the ship calls could report to the destination about the goods that presented some risk. It should also be noted that the ICS also includes the possibility, when the risk is high, that the goods are inspected at the intermediate point in the door to door route (that is the first EU port where the ship calls when it comes from a third country).

Action to be carried out by: DG TAXUD and Member States Customs Authorities.

Time Plan: 2015-2017

Recommendation 4

It is recommended that the European Customs enable mechanisms to facilitate traceability of documentary procedures associated with rail transit.

Action Proposed: Develop information systems with Customs integration so that they can offer, via mechanisms such as Web services, real-time information on the status of customs formalities.

Action to be carried out by: DG TAXUD and Member States Customs Authorities.

Time Plan: 2016-2017

Recommendation 5

It is proposed that goods coming from international shipping, during their subsequent rail travel retain the advantage of having 45 days to be given for customs approval instead of the 20 days available to goods of the regular inland customs approval.

Action Proposed: Develop the necessary legal instruments to ensure that goods entering the EU by sea and moved from the port to an interior point by rail have 45 days assigned for customs-approved (instead of the current 20).



Action to be carried out by: DG TAXUD and Member States Customs Authorities.

Time Plan: 2015-2017

Recommendation 6

In transit operations, a guarantee must be submitted, covering the total amount of customs duties and other taxes applicable to the transaction. In the customs community legislation, some criteria are provided to reduce this comprehensive guarantee or a guarantee waiver.

Some rail operators (usually those which offered rail transport services in what used to be considered natural monopolies) have guarantee exemptions for transit operations by rail.

Action Proposed: Extending the exemption to submit a guarantee covering the total amount of customs duties and other taxes applicable to the transit operation to all rail transit operators (independently on whether they use to be natural monopolistic rail transport companies or whether they are private companies recently created) can stimulate international rail transport.

Action to be carried out by: DG TAXUD.

Time Plan: 2015-2017

Recommendation 7

In export operations, it is recommended that the presentation of the export SAD can be sent as early as possible so that the necessary checks on the documents can be carried out in advance in order for any possible additional information requirements to be anticipated and to prepare the location for the goods that require to be inspected.

Action Proposed: Allow for the sending of the SAD export document to Customs at the departure port when the goods are loaded at the inland dry port of origin. Thus it becomes unnecessary to make a transit document for transportation from the point of origin to the port of departure and thereby financially benefit the sender.

Action to be carried out by: DG TAXUD and Member States Customs Authorities.

Time Plan: 2015-2017

5.3. Actions to be Implemented for the Interoperability of Shunting Operations between Shunting Yards and Rail Port Terminals

A key for increasing the competitiveness of intermodal container transport by rail is to achieve more frequent operations of heavy haul container trains between port and inland railway terminals. One important aspect is to achieve fast and flexible transshipment, shunting and coupling of container wagons.



Recommendation 1

Developing standard messages for the communication between the railway undertaking and the shunting operator where trains are divided, united or transformed prior to their entry in the port terminal would increase rail port terminal efficiency, decrease errors and minimise the time that trains spend at port terminals being handled.

Action Proposed: Developing standard messages for the communication between the railway undertaking and the infrastructure manager of railway shunting yards.

Action to be carried out by: Railway undertakings and infrastructure managers.

Time Plan: 2015-2016

Recommendation 2

Developing standard messages for the communication between the railway undertaking and the port infrastructure manager would increase safety within the port premises and decrease train turnaround time at ports.

Action Proposed: Developing standard messages for the communication between the railway undertaking and the port infrastructure manager.

Action to be carried out by: Railway undertakings and port infrastructure managers.

Time Plan: 2015-2016

Recommendation 3

According to best practices analysed in this sub-activity, ports with remaining available space, with investment capacity and where there is enough critical mass of traffic to justify the investment, should assess the possibility to develop a rail shunting yard within the port domain. Operating in a classification yard within the port area as opposed to an external shunting terminal maximises rail port operations efficiency.

Action Proposed: Developing rail shunting yards within the port domain.

Action to be carried out by: Port infrastructure managers.

Time Plan: 2015-2020

Recommendation 4

Railway undertakings, shunting terminal managers and port rail terminal managers should work in a coordinated fashion, sharing information about the railway undertaking's work orders and the specific transformations the train is going to go through at classification yards between origin and destination. The best practices recommended would be the integration of IT systems of the managers of inland rail terminals, shunting terminals and port terminals into the PCS so that all parties share the same documents and communicate electronically.



Action Proposed: Developing rail specific modules within PCSs and integrating railway undertakings, shunting terminal managers and port rail terminal managers in the PCS.

Action to be carried out by: Railway undertakings, shunting terminal managers, PCS managers and port rail terminal managers.

Time Plan: 2015-2020

Recommendation 5

As the integration of all rail transport related stakeholders in the PCS may take years given the implications of this strategic decision for several companies, a quick win solution to be prototyped and piloted in B2MOS would constitute a good recommendation to fix existing problems when trains are operated at shunting terminals between origin and destination at port. The quick win solution mentioned above will be prototyped and piloted in Initiative 7 in this Action and consists of a system of electronic messages to be integrated in an existing RTMS and shared with all the actors (infrastructure manager, port authority, port terminal and railway undertaking) so that all parties share the same information about sub convoys and container order in each train and communicate electronically. The main messages to be shared electronically include the “container – platform related document” and the “train circulation data” for each of the sub convoys. All the information needed by the different parties involved (length of convoy, total weight, number of platforms, order of the platforms, brake conditions, container numbers, among other fields of information) would be included in those messages.

Action Proposed: Developing a specific module for RTMS to make possible the electronic communication of “container – platform related document” and “train circulation data” between railway undertaking, rail infrastructure manager, shunting terminal manager, port authority and port terminal manager.

Action to be carried out by: Railway undertaking, rail infrastructure manager, shunting terminal manager, port authority and port terminal manager.

Time Plan: 2014-2015

Recommendation 6

At present, competition in the market of train handling services in shunting terminals and classification yards is not always existing at port areas. It is aiming to bring about desired effects of competition in a market such as increased operational efficiency, service quality and customer-driven corporate attitudes. It is recommended to promote the entrance of private companies for handling and shunting operations at port areas.

Action to be carried out by: Rail transport and infrastructure policy-makers.

Time Plan: 2015-2020